

September 21, 2022

Tasman Geosciences

Andy Sagen

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - UPRR 42 Pan Am AT True 1 Project Number - [none]**

Attached are your analytical results for KMG - UPRR 42 Pan Am AT True 1 received by Origins Laboratory, Inc. September 01, 2022. This project is associated with Origins project number Y209017-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3"	Y209017-01	Soil	September 1, 2022 12:40	09/01/2022 16:15
BG-01@3"	Y209017-02	Soil	September 1, 2022 12:50	09/01/2022 16:15
BG-02@3"	Y209017-03	Soil	September 1, 2022 12:55	09/01/2022 16:15
BG-03@3"	Y209017-04	Soil	September 1, 2022 13:00	09/01/2022 16:15
BG-04@3"	Y209017-05	Soil	September 1, 2022 13:05	09/01/2022 16:15

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645



www.originslaboratory.com

Client: Oxy / Tasman  
 Address: \_\_\_\_\_  
 Telephone Number: \_\_\_\_\_  
 Email Address: asagen@tasman-geo.com

Project Manager: Andy Sagen  
 Project Name: UPRR 42 Pan Am AT True 1  
 Project Number: \_\_\_\_\_  
 Samples Collected By: Leann Watson

**12000 017**

page of

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative			Matrix			Analysis			Sample Instructions						
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa Canister #	Other	Full Table		pH	EC	SAR	Boron	Metals	
5501 @ 3"	9-1-22	12:40	2	X						X									
BG-01 @ 3"		12:50	2								X								
BG-02 @ 3"		12:55	2								X								
BG-03 @ 3"		13:06	2								X								
BG-04 @ 3"		13:05	2								X								

Temp Received: 3.4  
 Date Results Needed

Relinquished By: JM Date: 9/1/22 Time: 1615  
 Received By: ASL Date: 9/1/22 Time: 1615  
 Turnaround Time:  Same Day  24 Hr  48 Hr  72 Hr  Standard

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*Jen Pellegrini*

Jen Pellegrini, Project Manager

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Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: V209017 Client: Tasman  
 Client Project ID: UPRR 42 Pan Am AT True 1  
 Checklist Completed by: MS Shipped Via: HD  
 Date/time completed: 9/1/22 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: NA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other:  
 Cooler Number/Temperature: 1 13.4 °C / °C / °C (Describe) °C  
 Thermometer ID: 7009

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	α			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		α		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		α		
Were all samples received intact <sup>(1)</sup> ?	1			
Was adequate sample volume provided <sup>(1)</sup> ?	α			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		U		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	α			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	1			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	α			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	α			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>			α	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analysis in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			T	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Andy Sagen  
 Reviewed by (Project Manager)

09/01/2022  
 Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

Jen Pellegrini, Project Manager

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**SS01@3"**  
**9/1/2022 12:40:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-01 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.442		0.102	mg/L	1	B210202	09/02/2022	09/06/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	1300		25.0	mg/kg	1	B210118	09/01/2022	09/02/2022	
Residual Range Organics (C28-C40)	552		100	"	"	"	"	"	

Surrogate: o-Terphenyl	112 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	18.3		0.500	mg/kg	250	B210120	09/01/2022	09/01/2022	
1,3,5-Trimethylbenzene	7.12		0.0500	"	25	"	"	09/02/2022	
Benzene	0.552		0.0500	"	"	"	"	"	
Ethylbenzene	3.85		0.0500	"	"	"	"	"	
Toluene	12.4		0.500	"	250	"	"	09/01/2022	
Xylenes, total	40.0		0.500	"	"	"	"	"	
Gasoline Range Hydrocarbons	937		50.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	119 %		70-130			"	"	09/02/2022	
Surrogate: Toluene-d8	111 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	93.3 %		70-130			"	"	"	

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9/1/2022 12:40:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 Y209017-01 (Soil)

**Metals by Saturated Paste by EPA 6010**

Calcium	4.83		0.499	meq/L	10	[CALC]	09/02/2022	09/06/2022	
Magnesium	0.934		0.823	"	"	"	"	"	
Sodium	3.69		0.435	"	"	"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	0.907	0.00335	0.00335	mg/Kg	5	L637502	09/15/2022	09/15/2022	
2-Methylnaphthalene	1.3	0.00335	0.00335	"	"	"	"	"	
Acenaphthene	0.0694	0.00335	0.00335	"	"	"	"	"	
Anthracene	0.00666	0.00335	0.00335	"	"	"	"	"	
Benzo(a)anthracene	0.0109	0.00335	0.00335	"	"	"	"	"	
Benzo(a)pyrene	0.00419	0.00335	0.00335	"	"	"	"	"	
Benzo(b)fluoranthene	0.00841	0.00335	0.00335	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.00335	0.00335	"	"	"	"	"	
Chrysene	0.062	0.00335	0.00335	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.00335	0.00335	"	"	"	"	"	
Fluoranthene	0.00421	0.00335	0.00335	"	"	"	"	"	
Fluorene	0.232	0.00335	0.00335	"	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00335	0.00335	"	"	"	"	"	
Naphthalene	0.407	0.00335	0.00335	"	"	"	"	"	
Pyrene	0.0271	0.00335	0.00335	"	"	"	"	"	

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**SS01@3"**

**9/1/2022 12:40:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y209017-01 (Soil)**

**PAH by 8270D SIM**

Surrogate: 2-Fluorobiphenyl	69.4 %		33-115			L6375 02	09/15/2022	09/15/2022	
Surrogate: 4-Terphenyl-d14	61.9 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	81.7 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	8.27			pH Units	1	B210204	09/02/2022	09/03/2022	
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**SAR by 20B Saturated Paste**

SAR	2.17			SAR	1	B210203	09/02/2022	09/06/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	1.16		0.00500	mmhos/cm	1	B210204	09/02/2022	09/03/2022	
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**Table 915 metals by EPA 6020B**

Arsenic	3.51		0.0977	mg/kg	5	B210710	09/07/2022	09/08/2022	
Barium	271		9.77	"	"	"	"	"	
Cadmium	0.587		0.0977	"	"	"	"	"	
Copper	16.2		9.77	"	"	"	"	"	
Lead	59.5		9.77	"	"	"	"	"	
Nickel	ND		9.77	"	"	"	"	"	U
Selenium	0.272		0.0977	"	"	"	"	"	

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9/1/2022 12:40:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 Y209017-01 (Soil)

**Table 915 metals by EPA 6020B**

Silver	ND		0.0977	mg/kg	5	B210710	09/07/2022	09/08/2022	U
Zinc	172		97.7	"	"	"	"	"	

**Total Metals by 7196 A**

Chromium, Hexavalent	ND	0.488	1	mg/Kg	2	L638183	09/01/2022	09/19/2022	
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**BG-01@3"**

**9/1/2022 12:50:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-02 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	1.22		0.0986	mg/L	1	B210202	09/02/2022	09/06/2022	
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**Metals by Saturated Paste by EPA 6010**

Calcium	6.33		0.499	meq/L	10	[CALC]	09/02/2022	09/06/2022	
Magnesium	2.94		0.823	"	"	"	"	"	
Sodium	1.01		0.435	"	"	"	"	"	

**pH in Soil by 9045D**

pH	7.34			pH Units	1	B210204	09/02/2022	09/03/2022	
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**SAR by 20B Saturated Paste**

SAR	0.471			SAR	1	B210203	09/02/2022	09/06/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	1.85		0.00500	mmhos/cm	1	B210204	09/02/2022	09/03/2022	
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**Table 915 metals by EPA 6020B**

Arsenic	2.44		0.0855	mg/kg	5	B210710	09/07/2022	09/08/2022	
Barium	63.4		8.55	"	"	"	"	"	
Cadmium	0.188		0.0855	"	"	"	"	"	
Copper	ND		8.55	"	"	"	"	"	U

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**BG-01@3"**

**9/1/2022 12:50:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-02 (Soil)**

**Table 915 metals by EPA 6020B**

Lead	9.36		8.55	mg/kg	5	B210710	09/07/2022	09/08/2022	
Nickel	ND		8.55	"	"	"	"	"	U
Selenium	0.128		0.0855	"	"	"	"	"	
Silver	ND		0.0855	"	"	"	"	"	U
Zinc	ND		85.5	"	"	"	"	"	U

**Total Metals by 7196A**

Chromium, Hexavalent	ND	1.22	2.5	mg/Kg	5	L638128	09/01/2022	09/19/2022	
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**BG-02@3"**

**9/1/2022 12:55:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-03 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.159		0.100	mg/L	1	B210202	09/02/2022	09/06/2022	
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**Metals by Saturated Paste by EPA 6010**

Calcium	1.98		0.499	meq/L	10	[CALC]	09/02/2022	09/06/2022	
Magnesium	ND		0.823	"	"	"	"	"	
Sodium	ND		0.435	"	"	"	"	"	

**pH in Soil by 9045D**

pH	8.10			pH Units	1	B210204	09/02/2022	09/03/2022	
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**SAR by 20B Saturated Paste**

SAR	0.0607			SAR	1	B210203	09/02/2022	09/06/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.348		0.00500	mmhos/cm	1	B210204	09/02/2022	09/03/2022	
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**Table 915 metals by EPA 6020B**

Arsenic	1.85		0.0888	mg/kg	5	B210703	09/07/2022	09/08/2022	
Barium	56.6		8.88	"	"	"	"	"	
Cadmium	0.137		0.0888	"	"	"	"	"	
Copper	ND		8.88	"	"	"	"	"	U

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**BG-02@3"**

**9/1/2022 12:55:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-03 (Soil)**

**Table 915 metals by EPA 6020B**

Lead	ND		8.88	mg/kg	5	B210703	09/07/2022	09/08/2022	U
Nickel	ND		8.88	"	"	"	"	"	U
Selenium	<b>0.107</b>		0.0888	"	"	"	"	"	
Silver	ND		0.0888	"	"	"	"	"	U
Zinc	ND		88.8	"	"	"	"	"	U

**Total Metals by 7196A**

Chromium, Hexavalent	ND	0.247	0.507	mg/Kg	1	L638128	09/01/2022	09/19/2022	
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**BG-03@3"**

**9/1/2022 1:00:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-04 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.401		0.0992	mg/L	1	B210202	09/02/2022	09/06/2022	
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**Metals by Saturated Paste by EPA 6010**

Calcium	5.12		0.499	meq/L	10	[CALC]	09/02/2022	09/06/2022	
Magnesium	1.30		0.823	"	"	"	"	"	
Sodium	ND		0.435	"	"	"	"	"	

**pH in Soil by 9045D**

pH	7.57			pH Units	1	B210204	09/02/2022	09/03/2022	
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**SAR by 20B Saturated Paste**

SAR	0.0525			SAR	1	B210203	09/02/2022	09/06/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.804		0.00500	mmhos/cm	1	B210204	09/02/2022	09/03/2022	
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**Table 915 metals by EPA 6020B**

Arsenic	1.76		0.0901	mg/kg	5	B210703	09/07/2022	09/08/2022	
Barium	57.1		9.01	"	"	"	"	"	
Cadmium	0.204		0.0901	"	"	"	"	"	
Copper	ND		9.01	"	"	"	"	"	U

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**BG-03@3"**

**9/1/2022 1:00:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-04 (Soil)**

**Table 915 metals by EPA 6020B**

Lead	ND		9.01	mg/kg	5	B210703	09/07/2022	09/08/2022	U
Nickel	ND		9.01	"	"	"	"	"	U
Selenium	<b>0.119</b>		0.0901	"	"	"	"	"	
Silver	ND		0.0901	"	"	"	"	"	U
Zinc	ND		90.1	"	"	"	"	"	U

**Total Metals by 7196 A**

Chromium, Hexavalent	ND	1.25	2.57	mg/Kg	5	L638183	09/01/2022	09/19/2022	
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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**BG-04@3"**

**9/1/2022 1:05:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-05 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	1.10		0.0999	mg/L	1	B210202	09/02/2022	09/06/2022	
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**Metals by Saturated Paste by EPA 6010**

Calcium	3.74		0.499	meq/L	10	[CALC]	09/02/2022	09/06/2022	
Magnesium	1.23		0.823	"	"	"	"	"	
Sodium	0.469		0.435	"	"	"	"	"	

**pH in Soil by 9045D**

pH	7.83			pH Units	1	B210204	09/02/2022	09/03/2022	
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**SAR by 20B Saturated Paste**

SAR	0.297			SAR	1	B210203	09/02/2022	09/06/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	1.01		0.00500	mmhos/cm	1	B210204	09/02/2022	09/03/2022	
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**Table 915 metals by EPA 6020B**

Arsenic	2.35		0.0921	mg/kg	5	B210703	09/07/2022	09/08/2022	
Barium	90.6		9.21	"	"	"	"	"	
Cadmium	0.177		0.0921	"	"	"	"	"	
Copper	ND		9.21	"	"	"	"	"	U

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**BG-04@3"**

**9/1/2022 1:05:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y209017-05 (Soil)**

**Table 915 metals by EPA 6020B**

Lead	10.2		9.21	mg/kg	5	B210703	09/07/2022	09/08/2022	
Nickel	ND		9.21	"	"	"	"	"	U
Selenium	0.215		0.0921	"	"	"	"	"	
Silver	ND		0.0921	"	"	"	"	"	U
Zinc	ND		92.1	"	"	"	"	"	U

**Total Metals by 7196A**

Chromium, Hexavalent	ND	0.247	0.507	mg/Kg	1	L638128	09/01/2022	09/19/2022	
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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2I0118 - EPA 3550B</b>										
<b>Blank (B2I0118-BLK1)</b>										
					Prepared: 09/01/2022 Analyzed: 09/01/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	28		"	24.9		113	50-150			

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Andy Sagen  
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 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I0118 - EPA 3550B**

**LCS (B2I0118-BS1)**

Prepared: 09/01/2022 Analyzed: 09/01/2022

Diesel (C10-C28)	1090	50.0	mg/kg	1000		109	70-130			
Residual Range Organics (C28-C40)	1030	200	"	1000		103	70-130			
Surrogate: o-Terphenyl	56		"	49.8		113	50-150			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I0118 - EPA 3550B**

<b>Matrix Spike (B2I0118-MS1)</b>	<b>Source: Y209015-01</b>			Prepared: 09/01/2022 Analyzed: 09/01/2022						
Diesel (C10-C28)	1070	50.0	mg/kg	1000	ND	107	70-130			
Residual Range Organics (C28-C40)	1070	200	"	1000	69.9	100	70-130			
Surrogate: o-Terphenyl	55		"	49.8		111	50-150			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2I0118 - EPA 3550B

Matrix Spike Dup (B2I0118-MSD1)	Source: Y209015-01			Prepared: 09/01/2022 Analyzed: 09/01/2022						
Diesel (C10-C28)	1090	50.0	mg/kg	1000	ND	109	70-130	1.27	35	
Residual Range Organics (C28-C40)	966	200	"	1000	69.9	89.6	70-130	10.4	35	
Surrogate: o-Terphenyl	49		"	49.8		99.0	50-150			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I0120 - EPA 5030 (soil)**

**Blank (B2I0120-BLK1)**

Prepared: 09/01/2022 Analyzed: 09/01/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125	112		70-130			
Surrogate: Toluene-d8	0.12		"	0.125	98.1		70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	99.5		70-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2I0120 - EPA 5030 (soil)

**LCS (B2I0120-BS1)**

Prepared: 09/01/2022 Analyzed: 09/01/2022

1,2,4-Trimethylbenzene	0.0979	0.00200	mg/kg	0.100		97.9	70-130			
1,3,5-Trimethylbenzene	0.0982	0.00200	"	0.100		98.2	70-130			
Benzene	0.0959	0.00200	"	0.100		95.9	70-130			
Ethylbenzene	0.102	0.00200	"	0.100		102	70-130			
Naphthalene	0.102	0.00380	"	0.100		102	70-130			
Toluene	0.0996	0.00200	"	0.100		99.6	70-130			
o-Xylene	0.100	0.00200	"	0.100		100	70-130			
m,p-Xylene	0.223	0.00400	"	0.200		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		107	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2I0120 - EPA 5030 (soil)

Matrix Spike (B2I0120-MS1)	Source: Y209016-01			Prepared: 09/01/2022 Analyzed: 09/01/2022						
1,2,4-Trimethylbenzene	0.0653	0.00200	mg/kg	0.100	ND	65.3	70-130			QM-07
1,3,5-Trimethylbenzene	0.0655	0.00200	"	0.100	ND	65.5	70-130			QM-07
Benzene	0.0719	0.00200	"	0.100	ND	71.9	70-130			
Ethylbenzene	0.0656	0.00200	"	0.100	ND	65.6	70-130			QM-07
Naphthalene	0.0841	0.00380	"	0.100	0.000520	83.6	70-130			
Toluene	0.0719	0.00200	"	0.100	ND	71.9	70-130			
o-Xylene	0.0672	0.00200	"	0.100	ND	67.2	70-130			QM-07
m,p-Xylene	0.144	0.00400	"	0.200	ND	72.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.16		"	0.125		126	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.4	70-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2I0120 - EPA 5030 (soil)

Matrix Spike Dup (B2I0120-MSD1)	Source: Y209016-01			Prepared: 09/01/2022 Analyzed: 09/01/2022						
1,2,4-Trimethylbenzene	0.0744	0.00200	mg/kg	0.100	ND	74.4	70-130	13.0	20	
1,3,5-Trimethylbenzene	0.0747	0.00200	"	0.100	ND	74.7	70-130	13.1	20	
Benzene	0.0779	0.00200	"	0.100	ND	77.9	70-130	7.93	20	
Ethylbenzene	0.0767	0.00200	"	0.100	ND	76.7	70-130	15.7	20	
Naphthalene	0.0907	0.00380	"	0.100	0.000520	90.2	70-130	7.51	20	
Toluene	0.0783	0.00200	"	0.100	ND	78.3	70-130	8.52	20	
o-Xylene	0.0766	0.00200	"	0.100	ND	76.6	70-130	13.1	20	
m,p-Xylene	0.167	0.00400	"	0.200	ND	83.7	70-130	14.8	20	
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		119	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Metals by SM 3500 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I0703 - Default Prep Metals**

**Blank (B2I0703-BLK1)**

Prepared: 09/07/2022 Analyzed: 09/09/2022

Arsenic	ND	0.000100	mg/kg							U
Barium	ND	0.0100	"							U
Cadmium	ND	0.000100	"							U
Copper	ND	0.0100	"							U
Lead	ND	0.0100	"							U
Nickel	ND	0.0100	"							U
Selenium	ND	0.000100	"							U
Silver	ND	0.000100	"							U
Zinc	ND	0.100	"							U

**LCS (B2I0703-BS1)**

Prepared: 09/07/2022 Analyzed: 09/08/2022

Arsenic	0.0443	0.000100	mg/kg	0.0500		88.7	80-120			
Barium	4.58	0.0100	"	5.00		91.6	80-120			
Cadmium	0.0476	0.000100	"	0.0500		95.3	80-120			
Copper	0.469	0.0100	"	0.500		93.8	80-120			
Lead	0.0472	0.0100	"	0.0500		94.3	80-120			
Nickel	0.0458	0.0100	"	0.0500		91.6	80-120			
Selenium	0.0463	0.000100	"	0.0500		92.7	80-120			
Silver	0.0491	0.000100	"	0.0500		98.2	80-120			
Zinc	0.447	0.100	"	0.500		89.3	80-120			

**Matrix Spike (B2I0703-MS1)**

Source: Y208758-08

Prepared: 09/07/2022 Analyzed: 09/08/2022

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Metals by SM 3500 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I0703 - Default Prep Metals**

<b>Matrix Spike (B2I0703-MS1)</b>		<b>Source: Y208758-08</b>			<b>Prepared: 09/07/2022 Analyzed: 09/08/2022</b>					
Arsenic	15.9	0.0923	mg/kg	9.23	5.15	116	75-125			
Barium	1070	9.23	"	923	77.4	108	75-125			
Cadmium	10.1	0.0923	"	9.23	0.182	107	75-125			
Copper	108	9.23	"	92.3	8.44	108	75-125			
Lead	19.3	9.23	"	9.23	7.57	127	75-125			QM-07
Nickel	21.2	9.23	"	9.23	10.2	119	75-125			
Selenium	9.46	0.0923	"	9.23	0.209	100	75-125			
Silver	10.2	0.0923	"	9.23	0.142	109	75-125			
Zinc	140	92.3	"	92.3	37.9	110	75-125			

<b>Matrix Spike Dup (B2I0703-MSD1)</b>		<b>Source: Y208758-08</b>			<b>Prepared: 09/07/2022 Analyzed: 09/08/2022</b>					
Arsenic	15.7	0.0939	mg/kg	9.39	5.15	113	75-125	1.12	20	
Barium	1010	9.39	"	939	77.4	99.6	75-125	5.84	20	
Cadmium	9.43	0.0939	"	9.39	0.182	98.5	75-125	6.45	20	
Copper	104	9.39	"	93.9	8.44	102	75-125	3.92	20	
Lead	18.3	9.39	"	9.39	7.57	114	75-125	5.04	20	
Nickel	20.2	9.39	"	9.39	10.2	106	75-125	4.94	20	
Selenium	9.03	0.0939	"	9.39	0.209	93.9	75-125	4.63	20	
Silver	9.78	0.0939	"	9.39	0.142	103	75-125	4.02	20	
Zinc	134	93.9	"	93.9	37.9	102	75-125	4.19	20	

**Batch B2I0710 - Default Prep Metals**

<b>Blank (B2I0710-BLK1)</b>		<b>Prepared: 09/07/2022 Analyzed: 09/09/2022</b>								
Arsenic	ND	0.000100	mg/kg							U
Barium	ND	0.0100	"							U
Cadmium	ND	0.000100	"							U

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 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Metals by SM 3500 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B210710 - Default Prep Metals**

**Blank (B210710-BLK1)**

Prepared: 09/07/2022 Analyzed: 09/08/2022

Copper	ND	0.0100	mg/kg							U
Lead	ND	0.0100	"							U
Nickel	ND	0.0100	"							U
Selenium	ND	0.000100	"							U
Silver	ND	0.000100	"							U
Zinc	ND	0.100	"							U

**LCS (B210710-BS1)**

Prepared: 09/07/2022 Analyzed: 09/08/2022

Arsenic	0.0481	0.000100	mg/kg	0.0500		96.1	80-120			
Barium	4.88	0.0100	"	5.00		97.6	80-120			
Cadmium	0.0507	0.000100	"	0.0500		101	80-120			
Copper	0.508	0.0100	"	0.500		102	80-120			
Lead	0.0506	0.0100	"	0.0500		101	80-120			
Nickel	0.0480	0.0100	"	0.0500		96.1	80-120			
Selenium	0.0507	0.000100	"	0.0500		101	80-120			
Silver	0.0535	0.000100	"	0.0500		107	80-120			
Zinc	0.479	0.100	"	0.500		95.9	80-120			

**Matrix Spike (B210710-MS1)**

**Source: Y209008-01**

Prepared: 09/07/2022 Analyzed: 09/08/2022

Arsenic	12.1	0.0967	mg/kg	9.67	2.74	96.5	75-125			
Barium	1020	9.67	"	967	34.1	102	75-125			
Cadmium	10.2	0.0967	"	9.67	0.231	104	75-125			
Copper	108	9.67	"	96.7	7.96	104	75-125			
Lead	17.1	9.67	"	9.67	6.90	105	75-125			
Nickel	15.9	9.67	"	9.67	6.80	94.0	75-125			
Selenium	9.84	0.0967	"	9.67	0.411	97.6	75-125			
Silver	10.4	0.0967	"	9.67	0.120	107	75-125			

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 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Metals by SM 3500 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I0710 - Default Prep Metals**

<b>Matrix Spike (B2I0710-MS1)</b>		<b>Source: Y209008-01</b>			<b>Prepared: 09/07/2022 Analyzed: 09/08/2022</b>					
Zinc	124	96.7	mg/kg	96.7	33.6	93.1	75-125			
<b>Matrix Spike Dup (B2I0710-MSD1)</b>		<b>Source: Y209008-01</b>			<b>Prepared: 09/07/2022 Analyzed: 09/08/2022</b>					
Arsenic	12.6	0.0921	mg/kg	9.21	2.74	107	75-125	4.02	20	
Barium	942	9.21	"	9.21	34.1	98.6	75-125	7.73	20	
Cadmium	9.47	0.0921	"	9.21	0.231	100	75-125	7.89	20	
Copper	102	9.21	"	9.21	7.96	102	75-125	5.55	20	
Lead	19.7	9.21	"	9.21	6.90	139	75-125	14.4	20	QM-07
Nickel	16.3	9.21	"	9.21	6.80	104	75-125	2.77	20	
Selenium	10.2	0.0921	"	9.21	0.411	106	75-125	3.45	20	
Silver	9.84	0.0921	"	9.21	0.120	105	75-125	5.78	20	
Zinc	125	92.1	"	92.1	33.6	99.4	75-125	1.26	20	

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Jen Pellegrini, Project Manager

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B210202 - Default Prep Metals**

**Blank (B210202-BLK1)**

Prepared: 09/02/2022 Analyzed: 09/06/2022

Boron	ND	0.100	mg/L							U
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**Duplicate (B210202-DUP1)**

**Source: Y209007-01**

Prepared: 09/02/2022 Analyzed: 09/06/2022

Boron	0.574	0.102	mg/L		0.602			4.74	50	
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**Batch B210203 - Default Prep Metals**

**Blank (B210203-BLK1)**

Prepared: 09/02/2022 Analyzed: 09/06/2022

SAR	0.00		SAR							U
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Calcium PPM	ND	10.0	mg/L							U
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Magnesium PPM	ND	10.0	"							U
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Sodium PPM	ND	10.0	"							U
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**Duplicate (B210203-DUP1)**

**Source: Y209007-01**

Prepared: 09/02/2022 Analyzed: 09/06/2022

Calcium PPM	56.2	10.0	mg/L		53.3			5.19	50	
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SAR	0.00		SAR		1.28			200	200	U
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Magnesium PPM	10.4	10.0	mg/L		9.69			6.56	50	
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Sodium PPM	39.4	10.0	"		38.8			1.50	50	
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Jen Pellegrini, Project Manager

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Saturated Paste - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I0204 - NO PREP**

**Blank (B2I0204-BLK1)**

Prepared: 09/02/2022 Analyzed: 09/03/2022

pH	0.00		pH Units							U
Specific Conductance (EC)	ND	0.00500	mmhos/cm							U

**Duplicate (B2I0204-DUP1)**

**Source: Y209007-01**

Prepared: 09/02/2022 Analyzed: 09/03/2022

pH	7.79		pH Units		7.98			2.41	25	
Specific Conductance (EC)	0.686	0.00500	mmhos/cm		0.649			5.62	25	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L637502 - 3550B**

<b>MSD (L 99298-MSD-L637502)</b>		<b>Source: 99298</b>			Prepared: 09/15/2022 Analyzed: 09/15/2022					
Benzo(a)anthracene	0.129	0.00335	mg/Kg	0.166	<0.00247	77.7	30-130	2.2	30	
Benzo(a)pyrene	0.155	0.00335	"	0.166	<0.00234	93.3	30-130	1.9	30	
Anthracene	0.13	0.00335	"	0.166	<0.00167	78.3	30-130	1.5	30	
Benzo(b)fluoranthene	0.0988	0.00335	"	0.166	<0.00293	59.5	30-130	16	30	
Benzo(k)fluoranthene	0.0954	0.00335	"	0.166	<0.00219	57.4	30-130	18.6	30	
Chrysene	0.129	0.00335	"	0.166	<0.00312	77.7	30-130	3	30	
Dibenz(a,h)anthracene	0.123	0.00335	"	0.166	<0.00307	74	30-130	7.8	30	
Acenaphthene	0.122	0.00335	"	0.166	<0.00152	73.4	30-130	1.6	30	
Indeno(1,2,3-cd)pyrene	0.114	0.00335	"	0.166	<0.00314	68.6	30-130	13.8	30	
Fluoranthene	0.13	0.00335	"	0.166	<0.00197	78.3	30-130	3	30	
Fluorene	0.126	0.00335	"	0.166	<0.00143	75.9	30-130	1.5	30	
1-Methylnaphthalene	0.121	0.00335	"	0.166	<0.00182	72.8	30-130	1.6	30	
Pyrene	0.127	0.00335	"	0.166	<0.00322	76.5	30-130	3.8	30	
Naphthalene	0.117	0.00335	"	0.166	<0.00242	70.4	30-130	0.8	30	
2-Methylnaphthalene	0.121	0.00335	"	0.166	<0.00323	72.8	30-130	1.6	30	
Surrogate: 2-Fluorobiphenyl	67.7		"	0.332	228	67.7	33-115			
Surrogate: 4-Terphenyl-d14	72.8		"	0.332	249	72.8	33-122			
Surrogate: Nitrobenzene-d5	63.2		"	0.332	217	63.2	29-110			

<b>MS (L 99298-MS-L637502)</b>		<b>Source: 99298</b>			Prepared: 09/15/2022 Analyzed: 09/15/2022					
Chrysene	0.133	0.00335	mg/Kg	0.167	<0.00312	79.6	30-130			
Dibenz(a,h)anthracene	0.133	0.00335	"	0.167	<0.00307	79.6	30-130			
Benzo(k)fluoranthene	0.115	0.00335	"	0.167	<0.00219	68.8	30-130			
Fluorene	0.128	0.00335	"	0.167	<0.00143	76.6	30-130			
Indeno(1,2,3-cd)pyrene	0.131	0.00335	"	0.167	<0.00314	78.4	30-130			
Pyrene	0.132	0.00335	"	0.167	<0.00322	79	30-130			
Naphthalene	0.118	0.00335	"	0.167	<0.00242	70.6	30-130			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L637502 - 3550B**

MS (L 99298-MS-L637502)	Source: 99298		Prepared: 09/15/2022 Analyzed: 09/15/2022							
Fluoranthene	0.134	0.00335	mg/Kg	0.167	<0.00197	80.2	30-130			
1-Methylnaphthalene	0.123	0.00335	"	0.167	<0.00182	73.6	30-130			
Benzo(a)pyrene	0.158	0.00335	"	0.167	<0.00234	94.6	30-130			
Benzo(a)anthracene	0.132	0.00335	"	0.167	<0.00247	79	30-130			
Anthracene	0.132	0.00335	"	0.167	<0.00167	79	30-130			
Acenaphthene	0.124	0.00335	"	0.167	<0.00152	74.2	30-130			
2-Methylnaphthalene	0.123	0.00335	"	0.167	<0.00323	73.6	30-130			
Benzo(b)fluoranthene	0.116	0.00335	"	0.167	<0.00293	69.4	30-130			
Surrogate: 4-Terphenyl-d14	75.6		"	0.333	249	75.6	33-122			
Surrogate: 2-Fluorobiphenyl	68.7		"	0.333	228	68.7	33-115			
Surrogate: Nitrobenzene-d5	65.4		"	0.333	217	65.4	29-110			

LCS (LCS-L637502)	Prepared: 09/15/2022 Analyzed: 09/15/2022									
Benzo(a)anthracene	0.134	0.00067	mg/Kg	0.167		80.2	30-130			
Benzo(b)fluoranthene	0.128	0.00067	"	0.167		76.6	30-130			
Chrysene	0.128	0.00067	"	0.167		76.6	30-130			
Dibenz(a,h)anthracene	0.16	0.00067	"	0.167		95.8	30-130			
Fluoranthene	0.133	0.00067	"	0.167		79.6	30-130			
Fluorene	0.122	0.00067	"	0.167		73	30-130			
Anthracene	0.126	0.00067	"	0.167		75.4	30-130			
Naphthalene	0.11	0.00067	"	0.167		65.8	30-130			
Benzo(a)pyrene	0.146	0.00067	"	0.167		87.4	30-130			
Pyrene	0.134	0.00067	"	0.167		80.2	30-130			
Indeno(1,2,3-cd)pyrene	0.155	0.00067	"	0.167		92.8	30-130			
2-Methylnaphthalene	0.112	0.00067	"	0.167		67	30-130			
1-Methylnaphthalene	0.111	0.00067	"	0.167		66.4	30-130			
Benzo(k)fluoranthene	0.146	0.00067	"	0.167		87.4	30-130			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L637502 - 3550B**

**LCS (LCS-L637502)**

Prepared: 09/15/2022 Analyzed: 09/15/2022

Acenaphthene	0.114	0.00067	mg/Kg	0.167		68.2	30-130			
Surrogate: Nitrobenzene-d5	69.9		"	0.333		69.9	29-110			
Surrogate: 4-Terphenyl-d14	81.3		"	0.333		81.3	33-122			
Surrogate: 2-Fluorobiphenyl	68.7		"	0.333		68.7	33-115			

**LRB (LRB-L637502)**

Prepared: 09/15/2022 Analyzed: 09/15/2022

Dibenz(a,h)anthracene	ND	0.00067	mg/Kg				-			
Anthracene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Naphthalene	ND	0.00067	"				-			
Surrogate: 4-Terphenyl-d14	74.7		"	0.333		74.7	33-122			
Surrogate: 2-Fluorobiphenyl	67.8		"	0.333		67.8	33-115			
Surrogate: Nitrobenzene-d5	67.8		"	0.333		67.8	29-110			

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Jen Pellegrini, Project Manager

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Total Metals by 7196 A - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L638183 -</b>										
<b>DUP (L 99352-DUP)</b>		<b>Source: 99352</b>			Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	ND	0.51	mg/Kg		<0.510		-	0	20	
<b>MS (L 99352-MS)</b>		<b>Source: 99352</b>			Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	38.8	2.57	mg/Kg	41.2	< 0.253	94	75-125			
<b>MSD (L 99352-MSD)</b>		<b>Source: 99352</b>			Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	640	51.9	mg/Kg	656	<25.3	98	75-125			
<b>LCS (LCS)</b>					Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	7.81	0.5	mg/Kg	8		98	75-125			
<b>LRB (LRB)</b>					Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg				-			

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Jen Pellegrini, Project Manager

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Total Metals by 7196A - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L638128 -**

<b>DUP (L 99351-DUP)</b>		<b>Source: 99351</b>			Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	ND	0.502	mg/Kg		<0.502		-	0	20	
<b>MS (L 99351-MS)</b>		<b>Source: 99351</b>			Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	35.3	2.51	mg/Kg	40.2	< 0.244	88	75-125			
<b>MSD (L 99351-MSD)</b>		<b>Source: 99351</b>			Prepared: Analyzed: 09/19/2022					
Chromium, Hexavalent	521	50	mg/Kg	613	<24.4	85	75-125			

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Jen Pellegrini, Project Manager

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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

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**Notes and Definitions**

U Sample is Non-Detect.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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October 12, 2022

Tasman Geosciences

Andy Sagen

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - UPRR 42 Pan Am AT True 1 Project Number - [none]**

Attached are your analytical results for KMG - UPRR 42 Pan Am AT True 1 received by Origins Laboratory, Inc. September 22, 2022. This project is associated with Origins project number Y209491-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-B01@2'	Y209491-01	Soil	September 22, 2022 8:50	09/22/2022 16:33

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: W09441 Client: Tasman  
 Client Project ID: W0922 42 PanAm  
 Checklist Completed by: DE Shipped Via: HD  
 Date/time completed: 09/22/2022 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: NA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1-3 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe)  
 Thermometer ID: 7804

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>			X	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / ( pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

[Signature]  
 Reviewed by (Project Manager)

09/22/2022  
 Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-B01@2'**  
**9/22/2022 8:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y209491-01 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	33.2	25.0	mg/kg	1	B2I2231	ADM	09/22/2022	09/27/2022	
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: <i>o</i> -Terphenyl	96.2 %	50-150			"	"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2I2235	JMA	09/22/2022	09/23/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Benzene	ND	0.00200	"	"	"	JMA	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Toluene	ND	0.00200	"	"	"	JMA	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JMA	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JMA	"	"	U

Surrogate: 1,2-Dichloroethane-d4	116 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	95.9 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	97.9 %	70-130			"	"	"	"	

**Table 915 metals by EPA 6020B**

Arsenic	4.34	0.0869	mg/kg	10	B2I2230	CIH	09/22/2022	09/23/2022	
Barium	124	8.69	"	"	"	CIH	"	"	
Cadmium	0.845	0.0869	"	"	"	CIH	"	"	

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-B01@2'**  
**9/22/2022 8:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y209491-01 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Lead	126	8.69	mg/kg	10	B2I2230	CIH	09/22/2022	09/23/2022
Selenium	0.242	0.0869	"	"	"	CIH	"	"

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	0.00547	0.00335	mg/Kg	5	L639970		09/28/2022	09/28/2022
2-Methylnaphthalene	0.00568	0.00335	"	"	"		"	"
Acenaphthene	ND	0.00335	"	"	"		"	"
Anthracene	ND	0.00335	"	"	"		"	"
Benzo(a)anthracene	ND	0.00335	"	"	"		"	"
Benzo(a)pyrene	ND	0.00335	"	"	"		"	"
Benzo(b)fluoranthene	ND	0.00335	"	"	"		"	"
Benzo(k)fluoranthene	ND	0.00335	"	"	"		"	"
Chrysene	0.00699	0.00335	"	"	"		"	"
Dibenz(a,h)anthracene	ND	0.00335	"	"	"		"	"
Fluoranthene	ND	0.00335	"	"	"		"	"
Fluorene	0.00243	0.00335	"	"	"		"	" J
Indeno(1,2,3-cd)pyrene	ND	0.00335	"	"	"		"	"
Naphthalene	ND	0.00335	"	"	"		"	"
Pyrene	0.00493	0.00335	"	"	"		"	"

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Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

**WH-B01@2'**

**9/22/2022 8:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y209491-01 (Soil)**

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Surrogate: 2-Fluorobiphenyl	61.1 %	33-115			L6399 70		09/28/2022	09/28/2022	
Surrogate: 4-Terphenyl-d14	72.3 %	33-122			"	"	"	"	
Surrogate: Nitrobenzene-d5	58.1 %	29-110			"	"	"	"	

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B212231 - EPA 3580</b>										
<b>Blank (B212231-BLK1)</b>										
					Prepared: 09/22/2022 Analyzed: 09/23/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	15		"	24.9		61.6	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I2231 - EPA 3580**

**LCS (B2I2231-BS1)**

Prepared: 09/22/2022 Analyzed: 09/24/2022

Diesel (C10-C28)	821	50.0	mg/kg	1000		82.1	70-130			
Residual Range Organics (C28-C40)	850	200	"	1000		85.0	70-130			
Surrogate: o-Terphenyl	35		"	49.8		70.0	50-150			

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 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I2231 - EPA 3580**

<b>Matrix Spike (B2I2231-MS1)</b>	<b>Source: Y209476-01</b>			<b>Prepared: 09/22/2022 Analyzed: 09/24/2022</b>						
Diesel (C10-C28)	817	50.0	mg/kg	1000	ND	81.7	70-130			
Residual Range Organics (C28-C40)	864	200	"	1000	ND	86.4	70-130			
Surrogate: o-Terphenyl	33		"	49.8		67.3	50-150			

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 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I2231 - EPA 3580**

<b>Matrix Spike Dup (B2I2231-MSD1)</b>	<b>Source: Y209476-01</b>			<b>Prepared: 09/22/2022 Analyzed: 09/24/2022</b>						
Diesel (C10-C28)	820	50.0	mg/kg	1000	ND	82.0	70-130	0.416	35	
Residual Range Organics (C28-C40)	897	200	"	1000	ND	89.7	70-130	3.75	35	
Surrogate: o-Terphenyl	34		"	49.8		68.2	50-150			

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 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B212235 - EPA 5030 (soil)**

**Blank (B212235-BLK1)**

Prepared: 09/22/2022 Analyzed: 09/23/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125	105		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	100		70-130			
Surrogate: 4-Bromofluorobenzene	0.11		"	0.125	86.9		70-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B212235 - EPA 5030 (soil)**

**LCS (B212235-BS1)**

Prepared: 09/22/2022 Analyzed: 09/23/2022

1,2,4-Trimethylbenzene	0.109	0.00200	mg/kg	0.100		109	70-130			
1,3,5-Trimethylbenzene	0.103	0.00200	"	0.100		103	70-130			
Benzene	0.100	0.00200	"	0.100		100	70-130			
Ethylbenzene	0.103	0.00200	"	0.100		103	70-130			
Naphthalene	0.116	0.00380	"	0.100		116	70-130			
Toluene	0.0988	0.00200	"	0.100		98.8	70-130			
o-Xylene	0.102	0.00200	"	0.100		102	70-130			
m,p-Xylene	0.222	0.00400	"	0.200		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.3	70-130			

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 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2I2235 - EPA 5030 (soil)

Matrix Spike (B2I2235-MS1)	Source: Y209483-02			Prepared: 09/22/2022 Analyzed: 09/23/2022						
1,2,4-Trimethylbenzene	0.0754	0.00200	mg/kg	0.100	ND	75.4	70-130			
1,3,5-Trimethylbenzene	0.0757	0.00200	"	0.100	ND	75.7	70-130			
Benzene	0.0907	0.00200	"	0.100	ND	90.7	70-130			
Ethylbenzene	0.0830	0.00200	"	0.100	ND	83.0	70-130			
Naphthalene	0.0799	0.00380	"	0.100	ND	79.9	70-130			
Toluene	0.0849	0.00200	"	0.100	ND	84.9	70-130			
o-Xylene	0.0819	0.00200	"	0.100	ND	81.9	70-130			
m,p-Xylene	0.174	0.00400	"	0.200	ND	86.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		113	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		100	70-130			

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 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B212235 - EPA 5030 (soil)**

Matrix Spike Dup (B212235-MSD1)	Source: Y209483-02			Prepared: 09/22/2022 Analyzed: 09/23/2022						
1,2,4-Trimethylbenzene	0.0762	0.00200	mg/kg	0.100	ND	76.2	70-130	1.03	20	
1,3,5-Trimethylbenzene	0.0760	0.00200	"	0.100	ND	76.0	70-130	0.343	20	
Benzene	0.0908	0.00200	"	0.100	ND	90.8	70-130	0.0882	20	
Ethylbenzene	0.0851	0.00200	"	0.100	ND	85.1	70-130	2.43	20	
Naphthalene	0.0840	0.00380	"	0.100	ND	84.0	70-130	5.01	20	
Toluene	0.0854	0.00200	"	0.100	ND	85.4	70-130	0.587	20	
o-Xylene	0.0823	0.00200	"	0.100	ND	82.3	70-130	0.438	20	
m,p-Xylene	0.178	0.00400	"	0.200	ND	89.1	70-130	2.55	20	
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		115	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**\*\*\* DEFAULT GENERAL METHOD \*\*\* - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I2230 - Default Prep Metals**

**Blank (B2I2230-BLK1)**

Prepared: 09/22/2022 Analyzed: 09/23/2022

Arsenic	ND	0.000100	mg/kg
Barium	ND	0.0100	"
Cadmium	ND	0.000100	"
Copper	ND	0.0100	"
Lead	ND	0.0100	"
Nickel	ND	0.0100	"
Selenium	ND	0.000100	"
Silver	ND	0.000100	"
Zinc	ND	0.100	"

**LCS (B2I2230-BS1)**

Prepared: 09/22/2022 Analyzed: 09/23/2022

Arsenic	0.0519	0.000100	mg/kg	0.0500	104	80-120
Barium	5.11	0.0100	"	5.00	102	80-120
Cadmium	0.0530	0.000100	"	0.0500	106	80-120
Copper	0.504	0.0100	"	0.500	101	80-120
Lead	0.0515	0.0100	"	0.0500	103	80-120
Nickel	0.0535	0.0100	"	0.0500	107	80-120
Selenium	0.0504	0.000100	"	0.0500	101	80-120
Silver	0.0506	0.000100	"	0.0500	101	80-120
Zinc	0.523	0.100	"	0.500	105	80-120

**Matrix Spike (B2I2230-MS1)**

**Source: Y209483-12**

Prepared: 09/22/2022 Analyzed: 09/23/2022

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 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**\*\*\* DEFAULT GENERAL METHOD \*\*\* - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2I2230 - Default Prep Metals**

<b>Matrix Spike (B2I2230-MS1)</b>		<b>Source: Y209483-12</b>			<b>Prepared: 09/22/2022 Analyzed: 09/23/2022</b>					
Arsenic	7.20	0.0938	mg/kg	4.69	3.48	79.3	75-125			
Barium	680	9.38	"	469	435	52.3	75-125			QM-07
Cadmium	4.59	0.0938	"	4.69	0.220	93.3	75-125			
Copper	45.5	9.38	"	46.9	12.4	70.5	75-125			QM-07
Lead	13.5	9.38	"	4.69	9.77	80.3	75-125			
Nickel	12.3	9.38	"	4.69	9.30	63.1	75-125			QM-07
Selenium	3.64	0.0938	"	4.69	0.0907	75.6	75-125			
Silver	4.22	0.0938	"	4.69	0.0434	89.0	75-125			
Zinc	87.3	93.8	"	46.9	49.8	79.9	75-125			
<b>Matrix Spike Dup (B2I2230-MSD1)</b>		<b>Source: Y209483-12</b>			<b>Prepared: 09/22/2022 Analyzed: 09/23/2022</b>					
Arsenic	7.46	0.0859	mg/kg	4.29	3.48	92.6	75-125	3.51	20	
Barium	768	8.59	"	429	435	77.4	75-125	12.1	20	
Cadmium	4.55	0.0859	"	4.29	0.220	101	75-125	0.924	20	
Copper	45.6	8.59	"	42.9	12.4	77.3	75-125	0.365	20	
Lead	14.5	8.59	"	4.29	9.77	111	75-125	7.03	20	
Nickel	12.6	8.59	"	4.29	9.30	75.8	75-125	2.38	20	
Selenium	3.68	0.0859	"	4.29	0.0907	83.6	75-125	1.22	20	
Silver	4.15	0.0859	"	4.29	0.0434	95.5	75-125	1.73	20	
Zinc	87.9	85.9	"	42.9	49.8	88.6	75-125	0.632	20	

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L639970 - 3550B**

<b>MSD (L 87964-MSD-L639970)</b>		<b>Source: 87964</b>			Prepared: 09/28/2022 Analyzed: 09/28/2022					
Dibenz(a,h)anthracene	0.113	0.00067	mg/Kg	0.162	<0.000614	69.7	30-130	25.4	30	
Anthracene	0.0981	0.00067	"	0.162	0.00156	59.5	30-130	24.8	30	
2-Methylnaphthalene	0.0921	0.00067	"	0.162	<0.000645	56.8	30-130	22.1	30	
1-Methylnaphthalene	0.0931	0.00067	"	0.162	<0.000364	57.4	30-130	22.7	30	
Pyrene	0.0948	0.00067	"	0.162	<0.000643	58.5	30-130	21.8	30	
Acenaphthene	0.0935	0.00067	"	0.162	0.000353	57.4	30-130	19.7	30	
Naphthalene	0.0893	0.00067	"	0.162	<0.000484	55.1	30-130	22.5	30	
Indeno(1,2,3-cd)pyrene	0.106	0.00067	"	0.162	<0.000627	65.4	30-130	26.9	30	
Fluoranthene	0.0958	0.00067	"	0.162	<0.000394	59.1	30-130	23.2	30	
Benzo(b)fluoranthene	0.0863	0.00067	"	0.162	<0.000585	53.2	30-130	20.4	30	
Chrysene	0.111	0.00067	"	0.162	0.00427	65.8	30-130	19.5	30	
Benzo(k)fluoranthene	0.0895	0.00067	"	0.162	<0.000437	55.2	30-130	18.7	30	
Benzo(a)anthracene	0.101	0.00067	"	0.162	<0.000493	62.3	30-130	21.2	30	
Benzo(a)pyrene	0.118	0.00067	"	0.162	0.000496	72.5	30-130	13.4	30	
Fluorene	0.0922	0.00067	"	0.162	0.000664	56.5	30-130	18.5	30	
Surrogate: 4-Terphenyl-d14	64.9		"	0.325	214	64.9	33-122			
Surrogate: 2-Fluorobiphenyl	58.1		"	0.325	194	58.1	33-115			
Surrogate: Nitrobenzene-d5	56.6		"	0.325	194	56.6	29-110			

<b>MS (L 87964-MS-L639970)</b>		<b>Source: 87964</b>			Prepared: 09/28/2022 Analyzed: 09/28/2022					
Benzo(k)fluoranthene	0.108	0.00067	mg/Kg	0.166	<0.000437	65	30-130			
1-Methylnaphthalene	0.117	0.00067	"	0.166	<0.000364	70.4	30-130			
2-Methylnaphthalene	0.115	0.00067	"	0.166	<0.000645	69.2	30-130			
Acenaphthene	0.114	0.00067	"	0.166	0.000353	68.4	30-130			
Anthracene	0.126	0.00067	"	0.166	0.00156	74.9	30-130			
Benzo(a)anthracene	0.125	0.00067	"	0.166	<0.000493	75.3	30-130			
Pyrene	0.118	0.00067	"	0.166	<0.000643	71	30-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L639970 - 3550B**

MS (L 87964-MS-L639970)	Source: 87964			Prepared: 09/28/2022 Analyzed: 09/28/2022						
Benzo(b)fluoranthene	0.106	0.00067	mg/Kg	0.166	<0.000585	63.8	30-130			
Chrysene	0.135	0.00067	"	0.166	0.00427	78.7	30-130			
Dibenz(a,h)anthracene	0.146	0.00067	"	0.166	<0.000614	87.9	30-130			
Fluoranthene	0.121	0.00067	"	0.166	<0.000394	72.8	30-130			
Fluorene	0.111	0.00067	"	0.166	0.000664	66.4	30-130			
Indeno(1,2,3-cd)pyrene	0.139	0.00067	"	0.166	<0.000627	83.7	30-130			
Naphthalene	0.112	0.00067	"	0.166	<0.000484	67.4	30-130			
Benzo(a)pyrene	0.135	0.00067	"	0.166	0.000496	81	30-130			
Surrogate: 2-Fluorobiphenyl	59.5		"	0.331	194	59.5	33-115			
Surrogate: 4-Terphenyl-d14	67		"	0.331	214	67	33-122			
Surrogate: Nitrobenzene-d5	56.4		"	0.331	194	56.4	29-110			

LCS (LCS-L639970)	Prepared: 09/28/2022 Analyzed: 09/28/2022									
Naphthalene	0.119	0.00067	mg/Kg	0.167		71.2	30-130			
Benzo(a)anthracene	0.131	0.00067	"	0.167		78.4	30-130			
Pyrene	0.136	0.00067	"	0.167		81.4	30-130			
Fluorene	0.129	0.00067	"	0.167		77.2	30-130			
Fluoranthene	0.137	0.00067	"	0.167		82	30-130			
Dibenz(a,h)anthracene	0.147	0.00067	"	0.167		88	30-130			
Chrysene	0.136	0.00067	"	0.167		81.4	30-130			
Benzo(k)fluoranthene	0.123	0.00067	"	0.167		73.6	30-130			
Indeno(1,2,3-cd)pyrene	0.134	0.00067	"	0.167		80.2	30-130			
Benzo(a)pyrene	0.153	0.00067	"	0.167		91.6	30-130			
Anthracene	0.134	0.00067	"	0.167		80.2	30-130			
Acenaphthene	0.124	0.00067	"	0.167		74.2	30-130			
2-Methylnaphthalene	0.122	0.00067	"	0.167		73	30-130			
1-Methylnaphthalene	0.123	0.00067	"	0.167		73.6	30-130			

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L639970 - 3550B**

**LCS (LCS-L639970)**

Prepared: 09/28/2022 Analyzed: 09/28/2022

Benzo(b)fluoranthene	0.118	0.00067	mg/Kg	0.167		70.6	30-130			
Surrogate: Nitrobenzene-d5	76.8		"	0.333		76.8	29-110			
Surrogate: 4-Terphenyl-d14	88.8		"	0.333		88.8	33-122			
Surrogate: 2-Fluorobiphenyl	81.6		"	0.333		81.6	33-115			

**LRB (LRB-L639970)**

Prepared: 09/28/2022 Analyzed: 09/28/2022

Benzo(b)fluoranthene	ND	0.00067	mg/Kg				-			
Pyrene	ND	0.00067	"				-			
Naphthalene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Surrogate: Nitrobenzene-d5	70.5		"	0.333		70.5	29-110			
Surrogate: 4-Terphenyl-d14	76.5		"	0.333		76.5	33-122			
Surrogate: 2-Fluorobiphenyl	70.8		"	0.333		70.8	33-115			

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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

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### Notes and Definitions

U Sample is Non-Detect.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J Estimated Value. Analyte below reported quantitation limit.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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October 11, 2022

Tasman Geosciences

Andy Sagen

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - UPRR 42 Pan Am T True 1    Project Number - -**

Attached are your analytical results for KMG - UPRR 42 Pan Am T True 1 received by Origins Laboratory, Inc. September 30, 2022. This project is associated with Origins project number Y210004-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: -  
Project: KMG - UPRR 42 Pan Am T True 1

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-N01@4'	Y210004-01	Soil	September 30, 2022 10:55	09/30/2022 13:16
WH-E01@4'	Y210004-02	Soil	September 30, 2022 11:00	09/30/2022 13:16
WH-S01@4'	Y210004-03	Soil	September 30, 2022 11:05	09/30/2022 13:16
WH-W01@4'	Y210004-04	Soil	September 30, 2022 11:10	09/30/2022 13:16
WH-B02@5'	Y210004-05	Soil	September 30, 2022 11:15	09/30/2022 13:16

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: 4210004 Client: Tasman Geosciences  
 Client Project ID: UPRR 42 Pan Am  
 Checklist Completed by: JSH/EHS Shipped Via: HD  
 Date/time completed: 10/03/12 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 7-10 °C 1 °C 1 °C (Describe) °C  
 Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		X		same day
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			no TAT
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JSP Date/Time Reviewed 10/5/12

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-N01@4'**  
**9/30/2022 10:55:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-01 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J0501	ADM	10/05/2022	10/05/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U
<i>Surrogate: o-Terphenyl</i>	80.1 %	50-150			"	"	"	"	

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J0606	JMA	10/06/2022	10/07/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Benzene	ND	0.00200	"	"	"	JMA	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Toluene	ND	0.00200	"	"	"	JMA	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JMA	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JMA	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	92.9 %	70-130			"	"	"	"	
<i>Surrogate: Toluene-d8</i>	111 %	70-130			"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	70-130			"	"	"	"	

**Table 915 metals by EPA 6020B**

Arsenic	<b>1.42</b>	0.0932	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	
Barium	<b>61.6</b>	9.32	"	"	"	CIH	"	"	
Cadmium	ND	0.0932	"	"	"	CIH	"	"	U

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

WH-N01@4'  
 9/30/2022 10:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-01 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Lead	ND	9.32	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	U
Selenium	ND	0.0932	"	"	"	CIH	"	"	U

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00067	mg/Kg	1	L641788		10/07/2022	10/07/2022	
2-Methylnaphthalene	ND	0.00067	"	"	"		"	"	
Acenaphthene	ND	0.00067	"	"	"		"	"	
Anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"	
Chrysene	ND	0.00067	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"	
Fluoranthene	ND	0.00067	"	"	"		"	"	
Fluorene	ND	0.00067	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: -  
Project: KMG - UPRR 42 Pan Am T True 1

**WH-N01@4'**  
**9/30/2022 10:55:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-01 (Soil)**  
**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Naphthalene	ND	0.00067	mg/Kg	1	L641788		10/07/2022	10/07/2022	
Pyrene	ND	0.00067	"	"	"		"	"	
Surrogate: 2-Fluorobiphenyl	49.2 %		33-115		"		"	"	
Surrogate: 4-Terphenyl-d14	65.4 %		33-122		"		"	"	
Surrogate: Nitrobenzene-d5	50.8 %		29-110		"		"	"	

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Jen Pellegrini, Project Manager

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-E01@4'**  
**9/30/2022 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-02 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J0501	ADM	10/05/2022	10/05/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: o-Terphenyl 81.6 % 50-150 " " "

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J0606	JMA	10/06/2022	10/07/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Benzene	ND	0.00200	"	"	"	JMA	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Toluene	ND	0.00200	"	"	"	JMA	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JMA	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JMA	"	"	U

Surrogate: 1,2-Dichloroethane-d4 98.4 % 70-130 " " "  
 Surrogate: Toluene-d8 109 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 104 % 70-130 " " "

**Table 915 metals by EPA 6020B**

Arsenic	3.26	0.0925	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	
Barium	60.9	9.25	"	"	"	CIH	"	"	
Cadmium	ND	0.0925	"	"	"	CIH	"	"	U

Origins Laboratory, Inc.



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 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-E01@4'**  
**9/30/2022 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-02 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Lead	ND	9.25	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	U
Selenium	ND	0.0925	"	"	"	CIH	"	"	U

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00067	mg/Kg	1	L641788		10/07/2022	10/07/2022	
2-Methylnaphthalene	ND	0.00067	"	"	"		"	"	
Acenaphthene	ND	0.00067	"	"	"		"	"	
Anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"	
Chrysene	ND	0.00067	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"	
Fluoranthene	ND	0.00067	"	"	"		"	"	
Fluorene	ND	0.00067	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: -  
Project: KMG - UPRR 42 Pan Am T True 1

**WH-E01@4'**

**9/30/2022 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-02 (Soil)**

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Naphthalene	ND	0.00067	mg/Kg	1	L641788		10/07/2022	10/07/2022	
Pyrene	ND	0.00067	"	"	"		"	"	
Surrogate: 2-Fluorobiphenyl	53.5 %		33-115		"		"	"	
Surrogate: 4-Terphenyl-d14	73.4 %		33-122		"		"	"	
Surrogate: Nitrobenzene-d5	53.2 %		29-110		"		"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-S01@4'**  
**9/30/2022 11:05:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-03 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	55.4	25.0	mg/kg	1	B2J0501	ADM	10/05/2022	10/05/2022	
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: *o*-Terphenyl 81.1 % 50-150 " " "

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J0606	JMA	10/06/2022	10/07/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Benzene	ND	0.00200	"	"	"	JMA	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Toluene	ND	0.00200	"	"	"	JMA	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JMA	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JMA	"	"	U

Surrogate: 1,2-Dichloroethane-d4 96.2 % 70-130 " " "  
 Surrogate: Toluene-d8 109 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 106 % 70-130 " " "

**Table 915 metals by EPA 6020B**

Arsenic	3.28	0.0943	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	
Barium	72.4	9.43	"	"	"	CIH	"	"	
Cadmium	ND	0.0943	"	"	"	CIH	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-S01@4'**

**9/30/2022 11:05:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-03 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Lead	ND	9.43	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	U
Selenium	ND	0.0943	"	"	"	CIH	"	"	U

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00335	mg/Kg	5	L641788		10/07/2022	10/07/2022	
2-Methylnaphthalene	ND	0.00335	"	"	"		"	"	
Acenaphthene	ND	0.00335	"	"	"		"	"	
Anthracene	ND	0.00335	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00335	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00335	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00335	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00335	"	"	"		"	"	
Chrysene	ND	0.00335	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00335	"	"	"		"	"	
Fluoranthene	ND	0.00335	"	"	"		"	"	
Fluorene	ND	0.00335	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00335	"	"	"		"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: -  
Project: KMG - UPRR 42 Pan Am T True 1

**WH-S01@4'**

**9/30/2022 11:05:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-03 (Soil)**

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Naphthalene	ND	0.00335	mg/Kg	5	L641788		10/07/2022	10/07/2022	
Pyrene	ND	0.00335	"	"	"		"	"	
Surrogate: 2-Fluorobiphenyl	61.3 %		33-115		"		"	"	
Surrogate: 4-Terphenyl-d14	69.7 %		33-122		"		"	"	
Surrogate: Nitrobenzene-d5	49.5 %		29-110		"		"	"	

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-W01@4'**  
**9/30/2022 11:10:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-04 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J0501	ADM	10/05/2022	10/05/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U
<i>Surrogate: o-Terphenyl</i>	84.7 %	50-150			"	"	"	"	

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J0606	JMA	10/06/2022	10/07/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Benzene	ND	0.00200	"	"	"	JMA	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Toluene	ND	0.00200	"	"	"	JMA	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JMA	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JMA	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	91.0 %	70-130			"	"	"	"	
<i>Surrogate: Toluene-d8</i>	111 %	70-130			"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	70-130			"	"	"	"	

**Table 915 metals by EPA 6020B**

Arsenic	<b>2.23</b>	0.0937	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	
Barium	<b>69.3</b>	9.37	"	"	"	CIH	"	"	
Cadmium	ND	0.0937	"	"	"	CIH	"	"	U

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 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

WH-W01@4'  
 9/30/2022 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-04 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Lead	ND	9.37	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022	U
Selenium	ND	0.0937	"	"	"	CIH	"	"	U

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00067	mg/Kg	1	L641788		10/07/2022	10/07/2022	
2-Methylnaphthalene	ND	0.00067	"	"	"		"	"	
Acenaphthene	ND	0.00067	"	"	"		"	"	
Anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"	
Chrysene	ND	0.00067	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"	
Fluoranthene	ND	0.00067	"	"	"		"	"	
Fluorene	ND	0.00067	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"	

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6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: -  
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WH-W01@4'

9/30/2022 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Y210004-04 (Soil)

Waypoint Analytical, LLC.

**PAH by 8270D SIM**

Naphthalene	ND	0.00067	mg/Kg	1	L641788		10/07/2022	10/07/2022	
Pyrene	ND	0.00067	"	"	"		"	"	
Surrogate: 2-Fluorobiphenyl	53.2 %		33-115		"		"	"	
Surrogate: 4-Terphenyl-d14	69.1 %		33-122		"		"	"	
Surrogate: Nitrobenzene-d5	55.9 %		29-110		"		"	"	

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Jen Pellegrini, Project Manager

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Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-B02@5'**  
**9/30/2022 11:15:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-05 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J0501	ADM	10/05/2022	10/05/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U
<i>Surrogate: o-Terphenyl</i>	76.4 %	50-150			"	"	"	"	

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J0606	JMA	10/06/2022	10/07/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Benzene	ND	0.00200	"	"	"	JMA	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JMA	"	"	U
Toluene	ND	0.00200	"	"	"	JMA	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JMA	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JMA	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	90.6 %	70-130			"	"	"	"	
<i>Surrogate: Toluene-d8</i>	112 %	70-130			"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	104 %	70-130			"	"	"	"	

**Table 915 metals by EPA 6020B**

Arsenic	<b>3.63</b>	0.0942	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022
Barium	<b>108</b>	9.42	"	"	"	CIH	"	"
Cadmium	<b>0.160</b>	0.0942	"	"	"	CIH	"	"

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 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-B02@5'**  
**9/30/2022 11:15:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-05 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Lead	72.0	9.42	mg/kg	10	B2J0402	CIH	10/04/2022	10/05/2022
Selenium	0.282	0.0942	"	"	"	CIH	"	"

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	0.00951	0.0067	mg/Kg	10	L641788		10/07/2022	10/07/2022
2-Methylnaphthalene	0.00924	0.0067	"	"	"		"	"
Acenaphthene	ND	0.0067	"	"	"		"	"
Anthracene	ND	0.0067	"	"	"		"	"
Benzo(a)anthracene	ND	0.0067	"	"	"		"	"
Benzo(a)pyrene	ND	0.0067	"	"	"		"	"
Benzo(b)fluoranthene	ND	0.0067	"	"	"		"	"
Benzo(k)fluoranthene	ND	0.0067	"	"	"		"	"
Chrysene	ND	0.0067	"	"	"		"	"
Dibenz(a,h)anthracene	ND	0.0067	"	"	"		"	"
Fluoranthene	ND	0.0067	"	"	"		"	"
Fluorene	ND	0.0067	"	"	"		"	"
Indeno(1,2,3-cd)pyrene	ND	0.0067	"	"	"		"	"
Naphthalene	ND	0.0067	"	"	"		"	"

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 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**WH-B02@5'**

**9/30/2022 11:15:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210004-05 (Soil)**

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Pyrene	<b>0.0067</b>	0.0067	mg/Kg	10	L641788		10/07/2022	10/07/2022	
Surrogate: 2-Fluorobiphenyl	59.4 %					"	"	"	
Surrogate: 4-Terphenyl-d14	85.5 %					"	"	"	
Surrogate: Nitrobenzene-d5	52.3 %					"	"	"	

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Tasman Geosciences  
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Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J0501 - EPA 3580</b>										
<b>Blank (B2J0501-BLK1)</b>										
					Prepared: 10/05/2022 Analyzed: 10/05/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	24		"	24.9		97.5	50-150			

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Jen Pellegrini, Project Manager

Tasman Geosciences  
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 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0501 - EPA 3580**

**LCS (B2J0501-BS1)**

Prepared: 10/05/2022 Analyzed: 10/05/2022

Diesel (C10-C28)	810	50.0	mg/kg	1000		81.0	70-130			
Residual Range Organics (C28-C40)	901	200	"	1000		90.1	70-130			
Surrogate: o-Terphenyl	40		"	49.8		79.7	50-150			

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Jen Pellegrini, Project Manager

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0501 - EPA 3580**

<b>Matrix Spike (B2J0501-MS1)</b>	<b>Source: Y210003-01</b>			Prepared: 10/05/2022 Analyzed: 10/05/2022						
Diesel (C10-C28)	933	50.0	mg/kg	1000	ND	93.3	70-130			
Residual Range Organics (C28-C40)	1620	200	"	1000	436	119	70-130			
Surrogate: o-Terphenyl	50		"	49.8		100	50-150			

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 Project: KMG - UPRR 42 Pan Am T True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0501 - EPA 3580**

<b>Matrix Spike Dup (B2J0501-MSD1)</b>	<b>Source: Y210003-01</b>			<b>Prepared: 10/05/2022 Analyzed: 10/05/2022</b>						
Diesel (C10-C28)	933	50.0	mg/kg	1000	ND	93.3	70-130	0.000536	35	
Residual Range Organics (C28-C40)	1410	200	"	1000	436	97.4	70-130	14.1	35	
<i>Surrogate: o-Terphenyl</i>	41		"	49.8		81.8	50-150			

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Jen Pellegrini, Project Manager

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0606 - EPA 5030 (soil)**

**Blank (B2J0606-BLK1)**

Prepared: 10/06/2022 Analyzed: 10/06/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.099		"	0.125	79.0		70-130			
Surrogate: Toluene-d8	0.14		"	0.125	112		70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125	101		70-130			

Origins Laboratory, Inc.



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Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0606 - EPA 5030 (soil)**

**LCS (B2J0606-BS1)**

Prepared: 10/06/2022 Analyzed: 10/06/2022

1,2,4-Trimethylbenzene	0.109	0.00200	mg/kg	0.100		109	70-130			
1,3,5-Trimethylbenzene	0.110	0.00200	"	0.100		110	70-130			
Benzene	0.0880	0.00200	"	0.100		88.0	70-130			
Ethylbenzene	0.112	0.00200	"	0.100		112	70-130			
Naphthalene	0.0981	0.00380	"	0.100		98.1	70-130			
Toluene	0.101	0.00200	"	0.100		101	70-130			
o-Xylene	0.111	0.00200	"	0.100		111	70-130			
m,p-Xylene	0.221	0.00400	"	0.200		110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125		80.6	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		100	70-130			

Origins Laboratory, Inc.



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 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0606 - EPA 5030 (soil)

Matrix Spike (B2J0606-MS1)	Source: Y210082-01			Prepared: 10/06/2022 Analyzed: 10/06/2022						
1,2,4-Trimethylbenzene	0.0936	0.00200	mg/kg	0.100	ND	93.6	70-130			
1,3,5-Trimethylbenzene	0.0948	0.00200	"	0.100	ND	94.8	70-130			
Benzene	0.0807	0.00200	"	0.100	ND	80.7	70-130			
Ethylbenzene	0.0989	0.00200	"	0.100	ND	98.9	70-130			
Naphthalene	0.0921	0.00380	"	0.100	ND	92.1	70-130			
Toluene	0.0931	0.00200	"	0.100	ND	93.1	70-130			
o-Xylene	0.0991	0.00200	"	0.100	ND	99.1	70-130			
m,p-Xylene	0.192	0.00400	"	0.200	ND	95.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.095		"	0.125		75.8	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.6	70-130			

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Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0606 - EPA 5030 (soil)**

Matrix Spike Dup (B2J0606-MSD1)	Source: Y210082-01			Prepared: 10/06/2022 Analyzed: 10/06/2022						
1,2,4-Trimethylbenzene	0.100	0.00200	mg/kg	0.100	ND	100	70-130	6.55	20	
1,3,5-Trimethylbenzene	0.101	0.00200	"	0.100	ND	101	70-130	6.32	20	
Benzene	0.0844	0.00200	"	0.100	ND	84.4	70-130	4.48	20	
Ethylbenzene	0.104	0.00200	"	0.100	ND	104	70-130	4.91	20	
Naphthalene	0.100	0.00380	"	0.100	ND	100	70-130	8.26	20	
Toluene	0.0971	0.00200	"	0.100	ND	97.1	70-130	4.21	20	
o-Xylene	0.104	0.00200	"	0.100	ND	104	70-130	4.86	20	
m,p-Xylene	0.201	0.00400	"	0.200	ND	100	70-130	4.63	20	
Surrogate: 1,2-Dichloroethane-d4	0.095		"	0.125		76.1	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.4	70-130			

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**\*\*\* DEFAULT GENERAL METHOD \*\*\* - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0402 - Default Prep Metals**

**Blank (B2J0402-BLK1)**

Prepared: 10/04/2022 Analyzed: 10/05/2022

Arsenic	ND	0.000100	mg/kg							U
Barium	ND	0.0100	"							U
Cadmium	ND	0.000100	"							U
Copper	ND	0.0100	"							U
Lead	ND	0.0100	"							U
Nickel	ND	0.0100	"							U
Selenium	ND	0.000100	"							U
Silver	ND	0.000100	"							U
Zinc	ND	0.100	"							U

**LCS (B2J0402-BS1)**

Prepared: 10/04/2022 Analyzed: 10/05/2022

Arsenic	0.0480	0.000100	mg/kg	0.0500		96.1	80-120			
Barium	4.75	0.0100	"	5.00		94.9	80-120			
Cadmium	0.0491	0.000100	"	0.0500		98.2	80-120			
Copper	0.491	0.0100	"	0.500		98.2	80-120			
Lead	0.0492	0.0100	"	0.0500		98.4	80-120			
Nickel	0.0492	0.0100	"	0.0500		98.4	80-120			
Selenium	0.0468	0.000100	"	0.0500		93.7	80-120			
Silver	0.0493	0.000100	"	0.0500		98.5	80-120			
Zinc	0.487	0.100	"	0.500		97.5	80-120			

**Matrix Spike (B2J0402-MS1)**

Source: Y210004-01

Prepared: 10/04/2022 Analyzed: 10/05/2022

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**\*\*\* DEFAULT GENERAL METHOD \*\*\* - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J0402 - Default Prep Metals**

<b>Matrix Spike (B2J0402-MS1)</b>		<b>Source: Y210004-01</b>			<b>Prepared: 10/04/2022 Analyzed: 10/05/2022</b>					
Arsenic	6.14	0.0989	mg/kg	4.95	1.42	95.3	75-125			
Barium	557	9.89	"	495	61.6	100	75-125			
Cadmium	5.05	0.0989	"	4.95	0.0643	101	75-125			
Copper	53.0	9.89	"	49.5	5.04	97.0	75-125			
Lead	9.15	9.89	"	4.95	4.37	96.7	75-125			U
Nickel	9.57	9.89	"	4.95	4.94	93.7	75-125			U
Selenium	4.25	0.0989	"	4.95	0.0494	85.0	75-125			
Silver	4.94	0.0989	"	4.95	0.0280	99.4	75-125			
Zinc	65.8	98.9	"	49.5	20.0	92.7	75-125			U
<b>Matrix Spike Dup (B2J0402-MSD1)</b>		<b>Source: Y210004-01</b>			<b>Prepared: 10/04/2022 Analyzed: 10/05/2022</b>					
Arsenic	5.90	0.0918	mg/kg	4.59	1.42	97.6	75-125	3.92	20	
Barium	534	9.18	"	459	61.6	103	75-125	4.15	20	
Cadmium	4.77	0.0918	"	4.59	0.0643	103	75-125	5.70	20	
Copper	50.3	9.18	"	45.9	5.04	98.7	75-125	5.17	20	
Lead	9.11	9.18	"	4.59	4.37	103	75-125	0.438	20	U
Nickel	9.45	9.18	"	4.59	4.94	98.4	75-125	1.26	20	
Selenium	3.93	0.0918	"	4.59	0.0494	84.5	75-125	7.95	20	
Silver	4.67	0.0918	"	4.59	0.0280	101	75-125	5.78	20	
Zinc	62.8	91.8	"	45.9	20.0	93.2	75-125	4.77	20	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L641788 - 3550B**

<b>MSD (L 93751-MSD-L641788)</b>	<b>Source: 93751</b>			<b>Prepared: 10/07/2022 Analyzed: 10/07/2022</b>						
Chrysene	0.103	0.00067	mg/Kg	0.164	<0.000624	62.8	30-130	0.9	30	
Dibenz(a,h)anthracene	0.128	0.00067	"	0.164	<0.000614	78	30-130	7.5	30	
Fluoranthene	0.114	0.00067	"	0.164	<0.000394	69.5	30-130	1.7	30	
Fluorene	0.0986	0.00067	"	0.164	<0.000286	60.1	30-130	2.4	30	
Benzo(k)fluoranthene	0.105	0.00067	"	0.164	<0.000437	64	30-130	3.7	30	
Naphthalene	0.0802	0.00067	"	0.164	<0.000484	48.9	30-130	2.6	30	
2-Methylnaphthalene	0.0883	0.00067	"	0.164	<0.000645	53.8	30-130	1.4	30	
Indeno(1,2,3-cd)pyrene	0.106	0.00067	"	0.164	<0.000627	64.6	30-130	8.1	30	
Benzo(b)fluoranthene	0.11	0.00067	"	0.164	<0.000585	67	30-130	0.9	30	
Benzo(a)pyrene	0.116	0.00067	"	0.164	<0.000468	70.7	30-130	0	30	
Benzo(a)anthracene	0.106	0.00067	"	0.164	<0.000493	64.6	30-130	0.9	30	
Anthracene	0.103	0.00067	"	0.164	<0.000334	62.8	30-130	3.1	30	
1-Methylnaphthalene	0.0902	0.00067	"	0.164	<0.000364	55	30-130	1.4	30	
Pyrene	0.117	0.00067	"	0.164	<0.000643	71.3	30-130	7	30	
Acenaphthene	0.0946	0.00067	"	0.164	<0.000304	57.6	30-130	0.3	30	
Surrogate: Nitrobenzene-d5	48.6		"	0.329	179	48.6	29-110			
Surrogate: 4-Terphenyl-d14	72		"	0.329	212	72	33-122			
Surrogate: 2-Fluorobiphenyl	52.8		"	0.329	173	52.8	33-115			

<b>MS (L 93751-MS-L641788)</b>	<b>Source: 93751</b>			<b>Prepared: 10/07/2022 Analyzed: 10/07/2022</b>						
Benzo(k)fluoranthene	0.109	0.00067	mg/Kg	0.164	<0.000437	66.4	30-130			
1-Methylnaphthalene	0.0889	0.00067	"	0.164	<0.000364	54.2	30-130			
2-Methylnaphthalene	0.087	0.00067	"	0.164	<0.000645	53	30-130			
Acenaphthene	0.0943	0.00067	"	0.164	<0.000304	57.5	30-130			
Anthracene	0.0998	0.00067	"	0.164	<0.000334	60.8	30-130			
Benzo(a)anthracene	0.107	0.00067	"	0.164	<0.000493	65.2	30-130			
Pyrene	0.109	0.00067	"	0.164	<0.000643	66.4	30-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L641788 - 3550B**

<b>MS (L 93751-MS-L641788)</b>	<b>Source: 93751</b>			<b>Prepared: 10/07/2022 Analyzed: 10/07/2022</b>						
Benzo(b)fluoranthene	0.111	0.00067	mg/Kg	0.164	<0.000585	67.6	30-130			
Chrysene	0.102	0.00067	"	0.164	<0.000624	62.1	30-130			
Dibenz(a,h)anthracene	0.138	0.00067	"	0.164	<0.000614	84.1	30-130			
Fluoranthene	0.112	0.00067	"	0.164	<0.000394	68.2	30-130			
Fluorene	0.101	0.00067	"	0.164	<0.000286	61.5	30-130			
Indeno(1,2,3-cd)pyrene	0.115	0.00067	"	0.164	<0.000627	70.1	30-130			
Naphthalene	0.0781	0.00067	"	0.164	<0.000484	47.6	30-130			
Benzo(a)pyrene	0.116	0.00067	"	0.164	<0.000468	70.7	30-130			
Surrogate: 2-Fluorobiphenyl	53.3		"	0.328	173	53.3	33-115			
Surrogate: 4-Terphenyl-d14	66.1		"	0.328	212	66.1	33-122			
Surrogate: Nitrobenzene-d5	47.2		"	0.328	179	47.2	29-110			

<b>LCS (LCS-L641788)</b>	<b>Prepared: 10/07/2022 Analyzed: 10/07/2022</b>									
Naphthalene	0.0893	0.00067	mg/Kg	0.167		53.4	30-130			
Benzo(a)anthracene	0.112	0.00067	"	0.167		67	30-130			
Pyrene	0.11	0.00067	"	0.167		65.8	30-130			
Fluorene	0.102	0.00067	"	0.167		61	30-130			
Fluoranthene	0.105	0.00067	"	0.167		62.8	30-130			
Dibenz(a,h)anthracene	0.155	0.00067	"	0.167		92.8	30-130			
Chrysene	0.111	0.00067	"	0.167		66.4	30-130			
Benzo(k)fluoranthene	0.114	0.00067	"	0.167		68.2	30-130			
Indeno(1,2,3-cd)pyrene	0.129	0.00067	"	0.167		77.2	30-130			
Benzo(a)pyrene	0.133	0.00067	"	0.167		79.6	30-130			
Anthracene	0.101	0.00067	"	0.167		60.4	30-130			
Acenaphthene	0.0974	0.00067	"	0.167		58.3	30-130			
2-Methylnaphthalene	0.0991	0.00067	"	0.167		59.3	30-130			
1-Methylnaphthalene	0.0993	0.00067	"	0.167		59.4	30-130			

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: -  
 Project: KMG - UPRR 42 Pan Am T True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L641788 - 3550B**

**LCS (LCS-L641788)**

Prepared: 10/07/2022 Analyzed: 10/07/2022

Benzo(b)fluoranthene	0.11	0.00067	mg/Kg	0.167		65.8	30-130			
Surrogate: Nitrobenzene-d5	59.4		"	0.333		59.4	29-110			
Surrogate: 4-Terphenyl-d14	77.7		"	0.333		77.7	33-122			
Surrogate: 2-Fluorobiphenyl	69.3		"	0.333		69.3	33-115			

**LRB (LRB-L641788)**

Prepared: 10/07/2022 Analyzed: 10/07/2022

Benzo(b)fluoranthene	ND	0.00067	mg/Kg				-			
Pyrene	ND	0.00067	"				-			
Naphthalene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Surrogate: Nitrobenzene-d5	52.2		"	0.333		52.2	29-110			
Surrogate: 4-Terphenyl-d14	69		"	0.333		69	33-122			
Surrogate: 2-Fluorobiphenyl	55.8		"	0.333		55.8	33-115			

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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: -  
Project: KMG - UPRR 42 Pan Am T True 1

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**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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---

Jen Pellegrini, Project Manager

November 08, 2022

Tasman Geosciences

Andy Sagen

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - UPRR 42 Pan Am AT True 1 Project Number - [none]**

Attached are your analytical results for KMG - UPRR 42 Pan Am AT True 1 received by Origins Laboratory, Inc. October 20, 2022. This project is associated with Origins project number Y210477-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-B03@6'	Y210477-01	Soil	October 20, 2022 14:56	10/20/2022 16:35
WH-S02@5'	Y210477-02	Soil	October 20, 2022 14:57	10/20/2022 16:35
WH-E02@5'	Y210477-03	Soil	October 20, 2022 14:58	10/20/2022 16:35

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

Origins Laboratory F-012207-01-R1  
Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: 4210477 Client: Tasman  
 Client Project ID: UPRR 42 PAN AM AT

Checklist Completed by: EHS Shipped Via: HO  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Date/time completed: 10/20/22 Airbill #: NA

Matrix(s) Received: (Check all that apply)  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 110-8-c / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C  
 Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to < 8°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)?	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity) / pH < 2 for samples preserved with HNO <sub>3</sub> , HCl, H <sub>2</sub> SO <sub>4</sub> / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

*[Signature]*  
 Reviewed by (Project Manager)

10/20/22  
 Date/Time Reviewed

Origins Laboratory, Inc.

*[Signature]*

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

WH-B03@6'  
 10/20/2022 2:56:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-01 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2046	ADM	10/20/2022	10/21/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: o-Terphenyl	85.3 %	50-150			"	"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2047	JSM	10/20/2022	10/21/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Benzene	ND	0.00200	"	"	"	JSM	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Naphthalene	ND	0.00380	"	"	"	JSM	"	"	U
Toluene	ND	0.00200	"	"	"	JSM	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JSM	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JSM	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	70-130			"	"	"	"	

**Table 915 metals by EPA 6020B**

Arsenic	2.50	0.0906	mg/kg	10	B2J2030	CIH	10/20/2022	10/21/2022	
Barium	54.8	9.06	"	"	"	CIH	"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

WH-B03@6'  
 10/20/2022 2:56:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-01 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Cadmium	ND	0.0906	mg/kg	10	B2J2030	CIH	10/20/2022	10/21/2022
Lead	11.2	9.06	"	"	"	CIH	"	"
Selenium	0.112	0.0906	"	"	"	CIH	"	"

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00201	mg/Kg	1	L646824		11/03/2022	11/04/2022
2-Methylnaphthalene	ND	0.00201	"	"	"		"	"
Acenaphthene	ND	0.00067	"	"	"		"	"
Anthracene	ND	0.00067	"	"	"		"	"
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"
Chrysene	ND	0.00067	"	"	"		"	"
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"
Fluoranthene	ND	0.00067	"	"	"		"	"
Fluorene	ND	0.00067	"	"	"		"	"
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-B03@6'**

**10/20/2022 2:56:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-01 (Soil)**

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Pyrene	ND	0.00067	mg/Kg	1	L646824		11/03/2022	11/04/2022	
Surrogate: 2-Fluorobiphenyl	36.7 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	56.9 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	38.5 %		29-110			"	"	"	

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-S02@5'**  
**10/20/2022 2:57:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-02 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	<b>1190</b>	25.0	mg/kg	1	B2J2046	ADM	10/20/2022	10/21/2022	
Residual Range Organics (C28-C40)	<b>674</b>	100	"	"	"	ADM	"	"	

Surrogate: *o*-Terphenyl 100 % 50-150 " " "

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2047	JSM	10/20/2022	10/21/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Benzene	ND	0.00200	"	"	"	JSM	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Naphthalene	ND	0.00380	"	"	"	JSM	"	"	U
Toluene	ND	0.00200	"	"	"	JSM	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JSM	"	"	U
Gasoline Range Hydrocarbons	<b>7.72</b>	0.200	"	"	"	JSM	"	"	

Surrogate: 1,2-Dichloroethane-d4 107 % 70-130 " " "  
 Surrogate: Toluene-d8 99.2 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 110 % 70-130 " " "

**Table 915 metals by EPA 6020B**

Arsenic	<b>2.14</b>	0.0916	mg/kg	10	B2J2030	CIH	10/20/2022	10/21/2022	
Barium	<b>54.0</b>	9.16	"	"	"	CIH	"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-S02@5'**  
**10/20/2022 2:57:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-02 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Cadmium	ND	0.0916	mg/kg	10	B2J2030	CIH	10/20/2022	10/21/2022
Lead	ND	9.16	"	"	"	CIH	"	"
Selenium	ND	0.0916	"	"	"	CIH	"	"

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.0201	mg/Kg	10	L646824		11/03/2022	11/04/2022
2-Methylnaphthalene	ND	0.0201	"	"	"		"	"
Acenaphthene	<b>0.0122</b>	0.0067	"	"	"		"	"
Anthracene	ND	0.0067	"	"	"		"	"
Benzo(a)anthracene	ND	0.0067	"	"	"		"	"
Benzo(a)pyrene	ND	0.0067	"	"	"		"	"
Benzo(b)fluoranthene	ND	0.0067	"	"	"		"	"
Benzo(k)fluoranthene	ND	0.0067	"	"	"		"	"
Chrysene	<b>0.0429</b>	0.0067	"	"	"		"	"
Dibenz(a,h)anthracene	ND	0.0067	"	"	"		"	"
Fluoranthene	ND	0.0067	"	"	"		"	"
Fluorene	ND	0.0067	"	"	"		"	"
Indeno(1,2,3-cd)pyrene	ND	0.0067	"	"	"		"	"

Origins Laboratory, Inc.



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6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

**WH-S02@5'**  
**10/20/2022 2:57:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-02 (Soil)**  
**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Pyrene	0.00721	0.0067	mg/Kg	10	L646824		11/03/2022	11/04/2022	
Surrogate: 2-Fluorobiphenyl	58.6 %		33-115		"	"	"	"	
Surrogate: 4-Terphenyl-d14	60.4 %		33-122		"	"	"	"	
Surrogate: Nitrobenzene-d5	47.2 %		29-110		"	"	"	"	

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-E02@5'**  
**10/20/2022 2:58:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-03 (Soil)**  
**Origins Laboratory, Inc.**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	33.6	25.0	mg/kg	1	B2J2046	ADM	10/20/2022	10/21/2022	
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: o-Terphenyl	83.0 %	50-150			"	"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2047	JSM	10/20/2022	10/21/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Benzene	ND	0.00200	"	"	"	JSM	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Naphthalene	ND	0.00380	"	"	"	JSM	"	"	U
Toluene	ND	0.00200	"	"	"	JSM	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JSM	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JSM	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	99.9 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	"	

**Table 915 metals by EPA 6020B**

Arsenic	2.64	0.0889	mg/kg	10	B2J2030	CIH	10/20/2022	10/21/2022	
Barium	55.8	8.89	"	"	"	CIH	"	"	

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-E02@5'**  
**10/20/2022 2:58:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-03 (Soil)**  
**Origins Laboratory, Inc.**

**Table 915 metals by EPA 6020B**

Cadmium	0.0915	0.0889	mg/kg	10	B2J2030	CIH	10/20/2022	10/21/2022
Lead	13.0	8.89	"	"	"	CIH	"	"
Selenium	0.109	0.0889	"	"	"	CIH	"	"

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

1-Methylnaphthalene	0.0031	0.00201	mg/Kg	1	L646824		11/03/2022	11/04/2022
2-Methylnaphthalene	0.00381	0.00201	"	"	"		"	"
Acenaphthene	0.000757	0.00067	"	"	"		"	"
Anthracene	ND	0.00067	"	"	"		"	"
Benzo(a)anthracene	0.000709	0.00067	"	"	"		"	"
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"
Chrysene	0.00128	0.00067	"	"	"		"	"
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"
Fluoranthene	ND	0.00067	"	"	"		"	"
Fluorene	0.00144	0.00067	"	"	"		"	"
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"
Pyrene	0.00153	0.00067	"	"	"		"	"

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Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

**WH-E02@5'**

**10/20/2022 2:58:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Y210477-03 (Soil)**

**Waypoint Analytical, LLC.**

**PAH by 8270D SIM**

Surrogate: 2-Fluorobiphenyl	50.2 %	33-115			L6468 24		11/03/2022	11/04/2022	
Surrogate: 4-Terphenyl-d14	55.7 %	33-122			"		"	"	
Surrogate: Nitrobenzene-d5	48.3 %	29-110			"		"	"	

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J2046 - EPA 3550B</b>										
<b>Blank (B2J2046-BLK1)</b>										
					Prepared: 10/20/2022 Analyzed: 10/21/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	22		"	24.9		89.4	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2046 - EPA 3550B**

**LCS (B2J2046-BS1)**

Prepared: 10/20/2022 Analyzed: 10/21/2022

Diesel (C10-C28)	846	50.0	mg/kg	1000		84.6	70-130			
Residual Range Organics (C28-C40)	862	200	"	1000		86.2	70-130			
Surrogate: o-Terphenyl	43		"	49.8		87.0	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2046 - EPA 3550B**

<b>Matrix Spike (B2J2046-MS1)</b>	<b>Source: Y210475-01</b>			Prepared: 10/20/2022 Analyzed: 10/21/2022						
Diesel (C10-C28)	889	50.0	mg/kg	1000	ND	88.9	70-130			
Residual Range Organics (C28-C40)	983	200	"	1000	ND	98.3	70-130			
Surrogate: o-Terphenyl	41		"	49.8		81.6	50-150			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2046 - EPA 3550B**

<b>Matrix Spike Dup (B2J2046-MSD1)</b>	<b>Source: Y210475-01</b>		<b>Prepared: 10/20/2022 Analyzed: 10/21/2022</b>							
Diesel (C10-C28)	867	50.0	mg/kg	1000	ND	86.7	70-130	2.51	35	
Residual Range Organics (C28-C40)	1120	200	"	1000	ND	112	70-130	13.3	35	
Surrogate: o-Terphenyl	42		"	49.8		83.9	50-150			

Origins Laboratory, Inc.



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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2047 - EPA 5030 (soil)**

**Blank (B2J2047-BLK1)**

Prepared: 10/20/2022 Analyzed: 10/20/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125	109		70-130			
Surrogate: Toluene-d8	0.12		"	0.125	99.5		70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125	103		70-130			

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Tasman Geosciences  
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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2047 - EPA 5030 (soil)**

**LCS (B2J2047-BS1)**

Prepared: 10/20/2022 Analyzed: 10/20/2022

1,2,4-Trimethylbenzene	0.114	0.00200	mg/kg	0.100		114	70-130			
1,3,5-Trimethylbenzene	0.116	0.00200	"	0.100		116	70-130			
Benzene	0.104	0.00200	"	0.100		104	70-130			
Ethylbenzene	0.109	0.00200	"	0.100		109	70-130			
Naphthalene	0.0962	0.00380	"	0.100		96.2	70-130			
Toluene	0.106	0.00200	"	0.100		106	70-130			
o-Xylene	0.109	0.00200	"	0.100		109	70-130			
m,p-Xylene	0.222	0.00400	"	0.200		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		100	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2047 - EPA 5030 (soil)

Matrix Spike (B2J2047-MS1)	Source: Y210475-01			Prepared: 10/20/2022 Analyzed: 10/20/2022						
1,2,4-Trimethylbenzene	0.102	0.00200	mg/kg	0.100	ND	102	70-130			
1,3,5-Trimethylbenzene	0.101	0.00200	"	0.100	ND	101	70-130			
Benzene	0.102	0.00200	"	0.100	ND	102	70-130			
Ethylbenzene	0.0948	0.00200	"	0.100	ND	94.8	70-130			
Naphthalene	0.105	0.00380	"	0.100	0.000520	105	70-130			
Toluene	0.0971	0.00200	"	0.100	ND	97.1	70-130			
o-Xylene	0.0976	0.00200	"	0.100	ND	97.6	70-130			
m,p-Xylene	0.195	0.00400	"	0.200	ND	97.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		116	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.1	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
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 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2047 - EPA 5030 (soil)

Matrix Spike Dup (B2J2047-MSD1)	Source: Y210475-01			Prepared: 10/20/2022 Analyzed: 10/20/2022						
1,2,4-Trimethylbenzene	0.0940	0.00200	mg/kg	0.100	ND	94.0	70-130	8.14	20	
1,3,5-Trimethylbenzene	0.0921	0.00200	"	0.100	ND	92.1	70-130	8.72	20	
Benzene	0.0982	0.00200	"	0.100	ND	98.2	70-130	3.97	20	
Ethylbenzene	0.0870	0.00200	"	0.100	ND	87.0	70-130	8.56	20	
Naphthalene	0.106	0.00380	"	0.100	0.000520	105	70-130	0.0379	20	
Toluene	0.0923	0.00200	"	0.100	ND	92.3	70-130	5.11	20	
o-Xylene	0.0903	0.00200	"	0.100	ND	90.3	70-130	7.81	20	
m,p-Xylene	0.179	0.00400	"	0.200	ND	89.6	70-130	8.73	20	
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		121	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.5	70-130			

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2030 - EPA 3050B**

**Blank (B2J2030-BLK1)**

Prepared: 10/20/2022 Analyzed: 10/21/2022

Arsenic	ND	0.000100	mg/kg							
Barium	ND	0.0100	"							
Cadmium	ND	0.000100	"							
Copper	ND	0.0100	"							
Lead	ND	0.0100	"							
Nickel	ND	0.0100	"							
Selenium	ND	0.000100	"							
Silver	ND	0.000100	"							
Zinc	ND	0.100	"							

**LCS (B2J2030-BS1)**

Prepared: 10/20/2022 Analyzed: 10/21/2022

Arsenic	0.0517	0.000100	mg/kg	0.0500		103	80-120			
Barium	4.90	0.0100	"	5.00		98.0	80-120			
Cadmium	0.0517	0.000100	"	0.0500		103	80-120			
Copper	0.537	0.0100	"	0.500		107	80-120			
Lead	0.0516	0.0100	"	0.0500		103	80-120			
Nickel	0.0533	0.0100	"	0.0500		107	80-120			
Selenium	0.0475	0.000100	"	0.0500		95.1	80-120			
Silver	0.0541	0.000100	"	0.0500		108	80-120			
Zinc	0.515	0.100	"	0.500		103	80-120			

**Matrix Spike (B2J2030-MS1)**

Source: Y210476-01

Prepared: 10/20/2022 Analyzed: 10/21/2022

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2030 - EPA 3050B**

<b>Matrix Spike (B2J2030-MS1)</b>		<b>Source: Y210476-01</b>			Prepared: 10/20/2022 Analyzed: 10/21/2022					
Arsenic	7.20	0.0929	mg/kg	4.65	1.64	119	75-125			
Barium	509	9.29	"	465	63.7	95.8	75-125			
Cadmium	4.67	0.0929	"	4.65	0.0752	99.0	75-125			
Copper	56.4	9.29	"	46.5	7.18	106	75-125			
Lead	9.63	9.29	"	4.65	4.45	112	75-125			
Nickel	11.1	9.29	"	4.65	5.12	129	75-125			QM-07
Selenium	4.16	0.0929	"	4.65	0.102	87.4	75-125			
Silver	4.86	0.0929	"	4.65	0.0238	104	75-125			
Zinc	70.3	92.9	"	46.5	21.5	105	75-125			

<b>Matrix Spike Dup (B2J2030-MSD1)</b>		<b>Source: Y210476-01</b>			Prepared: 10/20/2022 Analyzed: 10/21/2022					
Arsenic	6.65	0.0919	mg/kg	4.60	1.64	109	75-125	7.89	20	
Barium	525	9.19	"	460	63.7	100	75-125	3.12	20	
Cadmium	4.83	0.0919	"	4.60	0.0752	103	75-125	3.28	20	
Copper	55.4	9.19	"	46.0	7.18	105	75-125	1.87	20	
Lead	9.87	9.19	"	4.60	4.45	118	75-125	2.40	20	
Nickel	10.2	9.19	"	4.60	5.12	111	75-125	8.34	20	
Selenium	4.17	0.0919	"	4.60	0.102	88.5	75-125	0.192	20	
Silver	4.97	0.0919	"	4.60	0.0238	108	75-125	2.26	20	
Zinc	65.4	91.9	"	46.0	21.5	95.5	75-125	7.18	20	

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L646824 - 3550B**

<b>MSD (L 85889-MSD-L646824)</b>		<b>Source: 85889</b>			<b>Prepared: 11/03/2022 Analyzed: 11/04/2022</b>					
Dibenz(a,h)anthracene	0.126	0.00067	mg/Kg	0.163	<0.000614	77.3	30-130	9	30	
Fluorene	0.098	0.00067	"	0.163	<0.000286	60.1	30-130	6.8	30	
Anthracene	0.0993	0.00067	"	0.163	<0.000334	60.9	30-130	13.7	30	
Benzo(k)fluoranthene	0.108	0.00067	"	0.163	<0.000437	66.2	30-130	8	30	
Benzo(b)fluoranthene	0.0982	0.00067	"	0.163	<0.000585	60.2	30-130	28.6	30	
Benzo(a)pyrene	0.12	0.00067	"	0.163	<0.000468	73.6	30-130	11	30	
Benzo(a)anthracene	0.0975	0.00067	"	0.163	<0.000493	59.8	30-130	16.4	30	
Chrysene	0.104	0.00067	"	0.163	<0.000624	63.8	30-130	16.7	30	
Acenaphthene	0.0915	0.00067	"	0.163	<0.000304	56.1	30-130	4.9	30	
2-Methylnaphthalene	0.0832	0.00201	"	0.163	<0.00194	51	30-130	7.2	30	
1-Methylnaphthalene	0.0835	0.00201	"	0.163	<0.00109	51.2	30-130	7.1	30	
Fluoranthene	0.105	0.00067	"	0.163	<0.000394	64.4	30-130	20.5	30	
Indeno(1,2,3-cd)pyrene	0.124	0.00067	"	0.163	<0.000627	76	30-130	8.4	30	
Pyrene	0.105	0.00067	"	0.163	<0.000643	64.4	30-130	18.9	30	
Surrogate: 4-Terphenyl-d14	60.4		"	0.326	199	60.4	33-122			
Surrogate: Nitrobenzene-d5	44.4		"	0.326	173	44.4	29-110			
Surrogate: 2-Fluorobiphenyl	47.2		"	0.326	183	47.2	33-115			

<b>MS (L 85889-MS-L646824)</b>		<b>Source: 85889</b>			<b>Prepared: 11/03/2022 Analyzed: 11/04/2022</b>					
Chrysene	0.123	0.00067	mg/Kg	0.167	<0.000624	73.6	30-130			
Benzo(k)fluoranthene	0.117	0.00067	"	0.167	<0.000437	70	30-130			
Anthracene	0.114	0.00067	"	0.167	<0.000334	68.2	30-130			
Acenaphthene	0.0961	0.00067	"	0.167	<0.000304	57.5	30-130			
2-Methylnaphthalene	0.0895	0.00201	"	0.167	<0.00194	53.5	30-130			
1-Methylnaphthalene	0.0897	0.00201	"	0.167	<0.00109	53.7	30-130			
Fluoranthene	0.129	0.00067	"	0.167	<0.000394	77.2	30-130			
Benzo(b)fluoranthene	0.131	0.00067	"	0.167	<0.000585	78.4	30-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L646824 - 3550B**

<b>MS (L 85889-MS-L646824)</b>	<b>Source: 85889</b>		<b>Prepared: 11/03/2022 Analyzed: 11/04/2022</b>							
Benzo(a)anthracene	0.115	0.00067	mg/Kg	0.167	<0.000493	68.8	30-130			
Dibenz(a,h)anthracene	0.138	0.00067	"	0.167	<0.000614	82.6	30-130			
Fluorene	0.105	0.00067	"	0.167	<0.000286	62.8	30-130			
Indeno(1,2,3-cd)pyrene	0.135	0.00067	"	0.167	<0.000627	80.8	30-130			
Pyrene	0.127	0.00067	"	0.167	<0.000643	76	30-130			
Benzo(a)pyrene	0.134	0.00067	"	0.167	<0.000468	80.2	30-130			
Surrogate: 4-Terphenyl-d14	68.7		"	0.333	199	68.7	33-122			
Surrogate: 2-Fluorobiphenyl	45.9		"	0.333	183	45.9	33-115			
Surrogate: Nitrobenzene-d5	45		"	0.333	173	45	29-110			

<b>LCS (LCS-L646824)</b>			<b>Prepared: 11/03/2022 Analyzed: 11/04/2022</b>							
Chrysene	0.116	0.00067	mg/Kg	0.167		69.4	30-130			
Benzo(a)anthracene	0.109	0.00067	"	0.167		65.2	30-130			
Fluoranthene	0.111	0.00067	"	0.167		66.4	30-130			
Indeno(1,2,3-cd)pyrene	0.134	0.00067	"	0.167		80.2	30-130			
Fluorene	0.107	0.00067	"	0.167		64	30-130			
Dibenz(a,h)anthracene	0.136	0.00067	"	0.167		81.4	30-130			
Benzo(k)fluoranthene	0.125	0.00067	"	0.167		74.8	30-130			
Benzo(a)pyrene	0.127	0.00067	"	0.167		76	30-130			
Pyrene	0.111	0.00067	"	0.167		66.4	30-130			
Anthracene	0.11	0.00067	"	0.167		65.8	30-130			
Acenaphthene	0.101	0.00067	"	0.167		60.4	30-130			
2-Methylnaphthalene	0.0931	0.00201	"	0.167		55.7	30-130			
1-Methylnaphthalene	0.0929	0.00201	"	0.167		55.6	30-130			
Benzo(b)fluoranthene	0.114	0.00067	"	0.167		68.2	30-130			
Surrogate: Nitrobenzene-d5	59.4		"	0.333		59.4	29-110			
Surrogate: 4-Terphenyl-d14	71.7		"	0.333		71.7	33-122			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L646824 - 3550B</b>										
<b>LCS (LCS-L646824)</b>					Prepared: 11/03/2022 Analyzed: 11/04/2022					
Surrogate: 2-Fluorobiphenyl	60.3		mg/Kg	0.333		60.3	33-115			
<b>LRB (LRB-L646824)</b>					Prepared: 11/03/2022 Analyzed: 11/04/2022					
Benzo(a)pyrene	ND	0.00067	mg/Kg				-			
Pyrene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00201	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00201	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Surrogate: Nitrobenzene-d5	57.3		"	0.333		57.3	29-110			
Surrogate: 4-Terphenyl-d14	68.4		"	0.333		68.4	33-122			
Surrogate: 2-Fluorobiphenyl	60.3		"	0.333		60.3	33-115			

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Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

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### Notes and Definitions

U Sample is Non-Detect.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

November 03, 2022

Tasman Geosciences

Andy Sagen

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - UPRR 42 Pan Am AT True 1 Project Number - [none]**

Attached are your analytical results for KMG - UPRR 42 Pan Am AT True 1 received by Origins Laboratory, Inc. October 25, 2022. This project is associated with Origins project number Y210594-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL-B02@4'	Y210594-01	Soil	October 25, 2022 13:40	10/25/2022 16:29
FL-B03@4'	Y210594-02	Soil	October 25, 2022 13:42	10/25/2022 16:29

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 4210594 Client: Tasman  
 Client Project ID: UPRR 42 Pan Am AT True  
 Checklist Completed by: EHS/DE Shipped Via: HD  
 Date/time completed: 10/25/12 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: NA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1, 3.5 °C \_\_\_\_\_ °C \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C  
 Thermometer ID: 704

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>			X	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity) (pH < 2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

[Signature]  
 Reviewed by (Project Manager)

10/25/2012  
 Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**FL-B02@4'**

**10/25/2022 1:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210594-01 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.147	0.0987	mg/L	1	B2J2603	KAP	10/26/2022	10/27/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2540	ADM	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: <i>o</i> -Terphenyl	84.7 %	50-150			"	"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2539	JSM	10/25/2022	10/26/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Benzene	ND	0.00200	"	"	"	JSM	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Naphthalene	ND	0.00380	"	"	"	JSM	"	"	U
Toluene	ND	0.00200	"	"	"	JSM	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JSM	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JSM	"	"	U

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	70-130			"	"	"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**FL-B02@4'**

**10/25/2022 1:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210594-01 (Soil)**

**Metals by Saturated Paste by EPA 6010**

Calcium	1.15	0.499	meq/L	10	[CALC]	KAP	10/26/2022	10/28/2022
Magnesium	ND	0.823	"	"	"	KAP	"	"
Sodium	0.818	0.435	"	"	"	KAP	"	"

**pH in Soil by 9045D**

pH	8.30		pH Units	1	B2J2616	HJD	10/26/2022	10/27/2022
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**SAR by 20B Saturated Paste**

SAR	0.921		SAR	1	B2J2607	KAP	10/26/2022	10/27/2022
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.243	0.00500	mmhos/cm	1	B2J2616	HJD	10/26/2022	10/27/2022
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Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**FL-B03@4'**

**10/25/2022 1:42:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210594-02 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.108	0.0990	mg/L	1	B2J2603	KAP	10/26/2022	10/27/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2J2540	ADM	10/25/2022	10/26/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: <i>o</i> -Terphenyl	83.4 %	50-150			"	"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2J2539	JSM	10/25/2022	10/26/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Benzene	ND	0.00200	"	"	"	JSM	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Naphthalene	ND	0.00380	"	"	"	JSM	"	"	U
Toluene	ND	0.00200	"	"	"	JSM	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JSM	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JSM	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**FL-B03@4'**

**10/25/2022 1:42:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210594-02 (Soil)**

**Metals by Saturated Paste by EPA 6010**

Calcium	2.12	0.499	meq/L	10	[CALC]	KAP	10/26/2022	10/28/2022
Magnesium	ND	0.823	"	"	"	KAP	"	"
Sodium	1.82	0.435	"	"	"	KAP	"	"

**pH in Soil by 9045D**

pH	8.26		pH Units	1	B2J2616	HJD	10/26/2022	10/27/2022
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**SAR by 20B Saturated Paste**

SAR	1.50		SAR	1	B2J2607	KAP	10/26/2022	10/27/2022
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.469	0.00500	mmhos/cm	1	B2J2616	HJD	10/26/2022	10/27/2022
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Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2539 - EPA 5030 (soil)**

**Blank (B2J2539-BLK1)**

Prepared: 10/25/2022 Analyzed: 10/25/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125	84.6		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	100		70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125	102		70-130			

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2539 - EPA 5030 (soil)**

**LCS (B2J2539-BS1)**

Prepared: 10/25/2022 Analyzed: 10/25/2022

1,2,4-Trimethylbenzene	0.118	0.00200	mg/kg	0.100		118	70-130			
1,3,5-Trimethylbenzene	0.119	0.00200	"	0.100		119	70-130			
Benzene	0.113	0.00200	"	0.100		113	70-130			
Ethylbenzene	0.115	0.00200	"	0.100		115	70-130			
Naphthalene	0.107	0.00380	"	0.100		107	70-130			
Toluene	0.111	0.00200	"	0.100		111	70-130			
o-Xylene	0.115	0.00200	"	0.100		115	70-130			
m,p-Xylene	0.232	0.00400	"	0.200		116	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125		83.2	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2539 - EPA 5030 (soil)**

**LCS Dup (B2J2539-BSD1)**

Prepared: 10/25/2022 Analyzed: 10/25/2022

1,2,4-Trimethylbenzene	0.118	0.00200	mg/kg	0.100		118	70-130	0.00	20	
1,3,5-Trimethylbenzene	0.120	0.00200	"	0.100		120	70-130	0.986	20	
Benzene	0.113	0.00200	"	0.100		113	70-130	0.0177	20	
Ethylbenzene	0.115	0.00200	"	0.100		115	70-130	0.295	20	
Naphthalene	0.107	0.00380	"	0.100		107	70-130	0.131	20	
Toluene	0.113	0.00200	"	0.100		113	70-130	2.20	20	
o-Xylene	0.114	0.00200	"	0.100		114	70-130	0.297	20	
m,p-Xylene	0.231	0.00400	"	0.200		115	70-130	0.372	20	
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125		83.9	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.2	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J2540 - EPA 3550B</b>										
<b>Blank (B2J2540-BLK1)</b>										
					Prepared: 10/25/2022 Analyzed: 10/26/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	24		"	24.9		95.6	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2540 - EPA 3550B**

**LCS (B2J2540-BS1)**

Prepared: 10/25/2022 Analyzed: 10/26/2022

Diesel (C10-C28)	1000	50.0	mg/kg	1000		100	70-130			
Residual Range Organics (C28-C40)	954	200	"	1000		95.4	70-130			
Surrogate: o-Terphenyl	48		"	49.8		95.8	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2540 - EPA 3550B**

<b>Matrix Spike (B2J2540-MS1)</b>	<b>Source: Y210583-01</b>			Prepared: 10/25/2022 Analyzed: 10/26/2022						
Diesel (C10-C28)	998	50.0	mg/kg	1000	ND	99.8	70-130			
Residual Range Organics (C28-C40)	1070	200	"	1000	ND	107	70-130			
Surrogate: o-Terphenyl	51		"	49.8		103	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J2540 - EPA 3550B</b>										
<b>Matrix Spike Dup (B2J2540-MSD1)</b>					<b>Source: Y210583-01</b>					Prepared: 10/25/2022 Analyzed: 10/26/2022
Diesel (C10-C28)	874	50.0	mg/kg	1000	ND	87.4	70-130	13.2	35	
Residual Range Organics (C28-C40)	945	200	"	1000	ND	94.5	70-130	12.1	35	
Surrogate: o-Terphenyl	42		"	49.8		84.4	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2603 - DTPA Sorbitol Preparation**

**Blank (B2J2603-BLK1)**

Prepared: 10/26/2022 Analyzed: 10/27/2022

Boron ND 0.100 mg/L

**Duplicate (B2J2603-DUP1)**

Source: Y210593-01

Prepared: 10/26/2022 Analyzed: 10/27/2022

Boron 0.0642 0.0988 mg/L 0.0764 17.3 50

**Batch B2J2607 - Saturated Paste**

**Blank (B2J2607-BLK1)**

Prepared: 10/26/2022 Analyzed: 10/27/2022

Calcium PPM ND 10.0 mg/L

SAR 0.00 SAR

Magnesium PPM ND 10.0 mg/L

Sodium PPM ND 10.0 "

**Duplicate (B2J2607-DUP1)**

Source: Y210561-03

Prepared: 10/26/2022 Analyzed: 10/27/2022

Calcium PPM 53.1 10.0 mg/L 51.8 2.62 50

SAR 0.00 SAR 4.53 200 200

Magnesium PPM 14.6 10.0 mg/L 14.3 2.14 50

Sodium PPM 146 10.0 " 143 2.13 50

Origins Laboratory, Inc.



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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Saturated Paste - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J2616 - NO PREP</b>										
<b>Blank (B2J2616-BLK1)</b>					Prepared: 10/26/2022 Analyzed: 10/27/2022					
Specific Conductance (EC)	ND	0.00500	mmhos/cm							
<b>Duplicate (B2J2616-DUP1)</b>		<b>Source: Y210561-03</b>			Prepared: 10/26/2022 Analyzed: 10/27/2022					
Specific Conductance (EC)	1.06	0.00500	mmhos/cm		1.03			3.10	25	
pH	8.16		pH Units		8.20			0.489	25	

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

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**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

December 13, 2022

Tasman Geosciences

Andy Sagen

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - UPRR 42 Pan Am AT True 1 Project Number - [none]**

Attached are your analytical results for KMG - UPRR 42 Pan Am AT True 1 received by Origins Laboratory, Inc. December 06, 2022. This project is associated with Origins project number Y212117-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Andy Sagen  
Project Number: [none]  
Project: KMG - UPRR 42 Pan Am AT True 1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-S03@5'	Y212117-01	Soil	December 6, 2022 9:30	12/06/2022 15:55

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Jen Pellegrini, Project Manager



Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 4212117

Client: Tasman

Client Project ID: UPRR 42 Pan Am AT

Checklist Completed by: JSP/AE

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 12/10/12

Airbill #:

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other:

Cooler Number/Temperature: 1 / 10 °C / / °C / / °C (Describe)

Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager)

12/17/12  
 Date/Time Reviewed

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-S03@5'**  
**12/6/2022 9:30:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y212117-01 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B2L0624	ADM	12/06/2022	12/06/2022	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	ADM	"	"	U

Surrogate: *o*-Terphenyl 78.4 % 50-150 " " "

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B2L0622	JSM	12/06/2022	12/06/2022	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Benzene	ND	0.00200	"	"	"	JSM	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	JSM	"	"	U
Toluene	ND	0.00200	"	"	"	JSM	"	"	U
Xylenes, total	ND	0.00200	"	"	"	JSM	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	JSM	"	"	U

Surrogate: 1,2-Dichloroethane-d4 106 % 70-130 " " "  
 Surrogate: Toluene-d8 98.0 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 97.1 % 70-130 " " "

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00201	mg/Kg	1	L652777		12/08/2022	12/09/2022	
2-Methylnaphthalene	ND	0.00201	"	"	"		"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-S03@5'**  
**12/6/2022 9:30:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y212117-01 (Soil)**

**PAH by 8270D SIM**

Acenaphthene	ND	0.00067	mg/Kg	1	L652777		12/08/2022	12/09/2022	
Anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"	
Chrysene	ND	0.00067	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"	
Fluoranthene	ND	0.00067	"	"	"		"	"	
Fluorene	ND	0.00067	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"	
Naphthalene	ND	0.00201	"	"	"		"	"	
Pyrene	ND	0.00067	"	"	"		"	"	

Surrogate: 2-Fluorobiphenyl	51.8 %	33-115			"	"	"	"	
Surrogate: 4-Terphenyl-d14	58.8 %	33-122			"	"	"	"	
Surrogate: Nitrobenzene-d5	50.6 %	29-110			"	"	"	"	

**Table 915 metals by EPA 6020B**

Arsenic	<b>2.60</b>	0.0889	mg/kg	10	B2L0633	CNG	12/06/2022	12/06/2022	
Barium	<b>58.0</b>	8.89	"	"	"	CNG	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**WH-S03@5'**  
**12/6/2022 9:30:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y212117-01 (Soil)**

**Table 915 metals by EPA 6020B**

Cadmium	ND	0.0889	mg/kg	10	B2L0633	CNG	12/06/2022	12/06/2022	U
Lead	ND	8.89	"	"	"	CNG	"	"	U
Selenium	ND	0.0889	"	"	"	CNG	"	"	U

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 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2L0622 - EPA 5030 (soil)**

**Blank (B2L0622-BLK1)**

Prepared: 12/06/2022 Analyzed: 12/06/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125	103		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	101		70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	92.8		70-130			

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Andy Sagen  
 Project Number: [none]  
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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2L0622 - EPA 5030 (soil)**

**LCS (B2L0622-BS1)**

Prepared: 12/06/2022 Analyzed: 12/06/2022

1,2,4-Trimethylbenzene	0.108	0.00200	mg/kg	0.100		108	70-130			
1,3,5-Trimethylbenzene	0.110	0.00200	"	0.100		110	70-130			
Benzene	0.0999	0.00200	"	0.100		99.9	70-130			
Ethylbenzene	0.108	0.00200	"	0.100		108	70-130			
Naphthalene	0.101	0.00380	"	0.100		101	70-130			
Toluene	0.101	0.00200	"	0.100		101	70-130			
o-Xylene	0.107	0.00200	"	0.100		107	70-130			
m,p-Xylene	0.214	0.00400	"	0.200		107	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.2	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2L0622 - EPA 5030 (soil)

Matrix Spike (B2L0622-MS1)	Source: Y212111-01			Prepared: 12/06/2022 Analyzed: 12/06/2022						
1,2,4-Trimethylbenzene	0.108	0.00200	mg/kg	0.100	ND	108	70-130			
1,3,5-Trimethylbenzene	0.110	0.00200	"	0.100	ND	110	70-130			
Benzene	0.103	0.00200	"	0.100	ND	103	70-130			
Ethylbenzene	0.111	0.00200	"	0.100	ND	111	70-130			
Naphthalene	0.0953	0.00380	"	0.100	ND	95.3	70-130			
Toluene	0.102	0.00200	"	0.100	ND	102	70-130			
o-Xylene	0.110	0.00200	"	0.100	ND	110	70-130			
m,p-Xylene	0.218	0.00400	"	0.200	ND	109	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.9	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2L0622 - EPA 5030 (soil)

Matrix Spike Dup (B2L0622-MSD1)	Source: Y212111-01	Prepared: 12/06/2022	Analyzed: 12/06/2022						
1,2,4-Trimethylbenzene	0.107	0.00200	mg/kg	0.100	ND	107	70-130	0.409	20
1,3,5-Trimethylbenzene	0.112	0.00200	"	0.100	ND	112	70-130	1.95	20
Benzene	0.104	0.00200	"	0.100	ND	104	70-130	1.66	20
Ethylbenzene	0.112	0.00200	"	0.100	ND	112	70-130	0.611	20
Naphthalene	0.105	0.00380	"	0.100	ND	105	70-130	9.48	20
Toluene	0.106	0.00200	"	0.100	ND	106	70-130	3.89	20
o-Xylene	0.111	0.00200	"	0.100	ND	111	70-130	0.398	20
m,p-Xylene	0.217	0.00400	"	0.200	ND	109	70-130	0.450	20
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		98.6	70-130		
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130		
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130		

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2L0624 - EPA 3580</b>										
<b>Blank (B2L0624-BLK1)</b>										
					Prepared: 12/06/2022 Analyzed: 12/06/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	20		"	24.9		82.3	50-150			

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Jen Pellegrini, Project Manager

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2L0624 - EPA 3580**

**LCS (B2L0624-BS1)**

Prepared: 12/06/2022 Analyzed: 12/06/2022

Diesel (C10-C28)	1060	50.0	mg/kg	1000		106	70-130			
Residual Range Organics (C28-C40)	912	200	"	1000		91.2	70-130			
Surrogate: o-Terphenyl	39		"	49.8		78.7	50-150			

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Jen Pellegrini, Project Manager

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2L0624 - EPA 3580**

<b>Matrix Spike (B2L0624-MS1)</b>	<b>Source: Y212111-01</b>			Prepared: 12/06/2022 Analyzed: 12/06/2022						
Diesel (C10-C28)	1070	50.0	mg/kg	1000	ND	107	70-130			
Residual Range Organics (C28-C40)	949	200	"	1000	ND	94.9	70-130			
Surrogate: o-Terphenyl	38		"	49.8		76.6	50-150			

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Jen Pellegrini, Project Manager

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2L0624 - EPA 3580**

<b>Matrix Spike Dup (B2L0624-MSD1)</b>	<b>Source: Y212111-01</b>			<b>Prepared: 12/06/2022 Analyzed: 12/06/2022</b>						
Diesel (C10-C28)	1060	50.0	mg/kg	1000	ND	106	70-130	1.26	35	
Residual Range Organics (C28-C40)	963	200	"	1000	ND	96.3	70-130	1.50	35	
Surrogate: o-Terphenyl	38		"	49.8		75.4	50-150			

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2L0633 - EPA 3050B**

**Blank (B2L0633-BLK1)**

Prepared: 12/06/2022 Analyzed: 12/06/2022

Arsenic	ND	0.000100	mg/kg							U
Barium	ND	0.0100	"							U
Cadmium	ND	0.000100	"							U
Copper	ND	0.0100	"							U
Lead	ND	0.0100	"							U
Nickel	ND	0.0100	"							U
Selenium	ND	0.000100	"							U
Silver	ND	0.000100	"							U
Zinc	ND	0.100	"							U

**LCS (B2L0633-BS1)**

Prepared: 12/06/2022 Analyzed: 12/06/2022

Arsenic	0.0522	0.000100	mg/kg	0.0500		104	80-120
Barium	5.18	0.0100	"	5.00		104	80-120
Cadmium	0.0508	0.000100	"	0.0500		102	80-120
Copper	0.528	0.0100	"	0.500		106	80-120
Lead	0.0509	0.0100	"	0.0500		102	80-120
Nickel	0.0507	0.0100	"	0.0500		101	80-120
Selenium	0.0466	0.000100	"	0.0500		93.1	80-120
Silver	0.0511	0.000100	"	0.0500		102	80-120
Zinc	0.563	0.100	"	0.500		113	80-120

**Matrix Spike (B2L0633-MS1)**

Source: Y212117-01

Prepared: 12/06/2022 Analyzed: 12/06/2022

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Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2L0633 - EPA 3050B**

<b>Matrix Spike (B2L0633-MS1)</b>		<b>Source: Y212117-01</b>			Prepared: 12/06/2022 Analyzed: 12/06/2022					
Arsenic	7.32	0.0965	mg/kg	4.83	2.60	97.7	75-125			
Barium	540	9.65	"	483	58.0	99.9	75-125			
Cadmium	4.75	0.0965	"	4.83	0.0524	97.4	75-125			
Copper	51.6	9.65	"	48.3	2.71	101	75-125			
Lead	9.57	9.65	"	4.83	5.00	94.8	75-125			U
Nickel	8.97	9.65	"	4.83	4.41	94.4	75-125			U
Selenium	4.31	0.0965	"	4.83	0.0675	87.9	75-125			
Silver	4.81	0.0965	"	4.83	0.00267	99.6	75-125			
Zinc	66.4	96.5	"	48.3	16.4	103	75-125			U

<b>Matrix Spike Dup (B2L0633-MSD1)</b>		<b>Source: Y212117-01</b>			Prepared: 12/06/2022 Analyzed: 12/06/2022					
Arsenic	6.46	0.0888	mg/kg	4.44	2.60	86.9	75-125	12.4	20	
Barium	504	8.88	"	444	58.0	100	75-125	7.03	20	
Cadmium	4.43	0.0888	"	4.44	0.0524	98.5	75-125	7.08	20	
Copper	49.2	8.88	"	44.4	2.71	105	75-125	4.63	20	
Lead	9.33	8.88	"	4.44	5.00	97.5	75-125	2.55	20	
Nickel	8.73	8.88	"	4.44	4.41	97.4	75-125	2.61	20	U
Selenium	4.10	0.0888	"	4.44	0.0675	90.9	75-125	4.86	20	
Silver	4.49	0.0888	"	4.44	0.00267	101	75-125	6.88	20	
Zinc	62.9	88.8	"	44.4	16.4	105	75-125	5.38	20	U

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 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L652777 - 3550B**

<b>MSD (L 98979-MSD-L652777)</b>		<b>Source: 98979</b>			Prepared: 12/08/2022 Analyzed: 12/09/2022					
Benzo(b)fluoranthene	0.0763	0.00067	mg/Kg	0.165	<0.000585	46.2	30-130	1.5	30	
Indeno(1,2,3-cd)pyrene	0.0808	0.00067	"	0.165	<0.000627	48.9	30-130	13.2	30	
Pyrene	0.112	0.00067	"	0.165	<0.000643	67.8	30-130	1.7	30	
Naphthalene	0.0912	0.00201	"	0.165	<0.00145	55.2	30-130	15	30	
Benzo(a)anthracene	0.112	0.00067	"	0.165	<0.000493	67.8	30-130	7.7	30	
1-Methylnaphthalene	0.0963	0.00201	"	0.165	<0.00109	58.3	30-130	27.4	30	
2-Methylnaphthalene	0.108	0.00201	"	0.165	<0.00194	65.4	30-130	27.2	30	
Chrysene	0.114	0.00067	"	0.165	<0.000624	69	30-130	1.7	30	
Anthracene	0.103	0.00067	"	0.165	<0.000334	62.4	30-130	7.4	30	
Fluorene	0.0975	0.00067	"	0.165	<0.000286	59	30-130	25.5	30	
Benzo(a)pyrene	0.116	0.00067	"	0.165	<0.000468	70.3	30-130	6.6	30	
Benzo(k)fluoranthene	0.0741	0.00067	"	0.165	<0.000437	44.9	30-130	5.1	30	
Dibenz(a,h)anthracene	0.0837	0.00067	"	0.165	<0.000614	50.7	30-130	8.2	30	
Fluoranthene	0.109	0.00067	"	0.165	<0.000394	66	30-130	10.4	30	
Acenaphthene	0.0977	0.00067	"	0.165	<0.000304	59.2	30-130	10	30	
Surrogate: Nitrobenzene-d5	53.3		"	0.33	174	53.3	29-110			
Surrogate: 2-Fluorobiphenyl	52.4		"	0.33	172	52.4	33-115			
Surrogate: 4-Terphenyl-d14	59		"	0.33	193	59	33-122			

<b>MS (L 98979-MS-L652777)</b>		<b>Source: 98979</b>			Prepared: 12/08/2022 Analyzed: 12/09/2022					
Naphthalene	0.106	0.00201	mg/Kg	0.166	<0.00145	63.8	30-130			
Fluorene	0.126	0.00067	"	0.166	<0.000286	75.9	30-130			
Indeno(1,2,3-cd)pyrene	0.0923	0.00067	"	0.166	<0.000627	55.6	30-130			
Acenaphthene	0.108	0.00067	"	0.166	<0.000304	65	30-130			
Fluoranthene	0.121	0.00067	"	0.166	<0.000394	72.8	30-130			
Pyrene	0.114	0.00067	"	0.166	<0.000643	68.6	30-130			
1-Methylnaphthalene	0.127	0.00201	"	0.166	<0.00109	76.5	30-130			

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 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L652777 - 3550B**

<b>MS (L 98979-MS-L652777)</b>	<b>Source: 98979</b>			<b>Prepared: 12/08/2022 Analyzed: 12/09/2022</b>						
Anthracene	0.111	0.00067	mg/Kg	0.166	<0.000334	66.8	30-130			
Benzo(a)anthracene	0.121	0.00067	"	0.166	<0.000493	72.8	30-130			
Benzo(a)pyrene	0.124	0.00067	"	0.166	<0.000468	74.6	30-130			
Benzo(b)fluoranthene	0.0775	0.00067	"	0.166	<0.000585	46.6	30-130			
Benzo(k)fluoranthene	0.078	0.00067	"	0.166	<0.000437	46.9	30-130			
Chrysene	0.116	0.00067	"	0.166	<0.000624	69.8	30-130			
Dibenz(a,h)anthracene	0.0909	0.00067	"	0.166	<0.000614	54.7	30-130			
2-Methylnaphthalene	0.142	0.00201	"	0.166	<0.00194	85.5	30-130			
<i>Surrogate: Nitrobenzene-d5</i>	69.7		"	0.331	174	69.7	29-110			
<i>Surrogate: 2-Fluorobiphenyl</i>	66.7		"	0.331	172	66.7	33-115			
<i>Surrogate: 4-Terphenyl-d14</i>	64.3		"	0.331	193	64.3	33-122			

<b>LCS (LCS-L652777)</b>				<b>Prepared: 12/08/2022 Analyzed: 12/09/2022</b>						
Dibenz(a,h)anthracene	0.102	0.00067	mg/Kg	0.167		61	30-130			
Indeno(1,2,3-cd)pyrene	0.101	0.00067	"	0.167		60.4	30-130			
Pyrene	0.116	0.00067	"	0.167		69.4	30-130			
Naphthalene	0.102	0.00201	"	0.167		61	30-130			
Benzo(a)anthracene	0.118	0.00067	"	0.167		70.6	30-130			
1-Methylnaphthalene	0.101	0.00201	"	0.167		60.4	30-130			
2-Methylnaphthalene	0.115	0.00201	"	0.167		68.8	30-130			
Fluorene	0.102	0.00067	"	0.167		61	30-130			
Anthracene	0.112	0.00067	"	0.167		67	30-130			
Benzo(a)pyrene	0.122	0.00067	"	0.167		73	30-130			
Benzo(b)fluoranthene	0.0904	0.00067	"	0.167		54.1	30-130			
Benzo(k)fluoranthene	0.0931	0.00067	"	0.167		55.7	30-130			
Chrysene	0.124	0.00067	"	0.167		74.2	30-130			
Fluoranthene	0.123	0.00067	"	0.167		73.6	30-130			

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Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Andy Sagen  
 Project Number: [none]  
 Project: KMG - UPRR 42 Pan Am AT True 1

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L652777 - 3550B</b>										
<b>LCS (LCS-L652777)</b>					Prepared: 12/08/2022 Analyzed: 12/09/2022					
Acenaphthene	0.101	0.00067	mg/Kg	0.167		60.4	30-130			
Surrogate: Nitrobenzene-d5	58.8		"	0.333		58.8	29-110			
Surrogate: 2-Fluorobiphenyl	54.6		"	0.333		54.6	33-115			
Surrogate: 4-Terphenyl-d14	68.4		"	0.333		68.4	33-122			
<b>LRB (LRB-L652777)</b>					Prepared: 12/08/2022 Analyzed: 12/09/2022					
Indeno(1,2,3-cd)pyrene	ND	0.00067	mg/Kg				-			
Pyrene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00201	"				-			
Naphthalene	ND	0.00201	"				-			
Fluorene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00201	"				-			
Surrogate: Nitrobenzene-d5	56.1		"	0.333		56.1	29-110			
Surrogate: 4-Terphenyl-d14	63.3		"	0.333		63.3	33-122			
Surrogate: 2-Fluorobiphenyl	57		"	0.333		57	33-115			

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**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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Jen Pellegrini, Project Manager